9060B Excavator
Service Manual No. 7-65272

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CASE CORPORATION
700 STATE STREET
RACINE, WI 53404 U.S.A.

CASE CANADA CORPORATION
450 SHERMAN AVENUE
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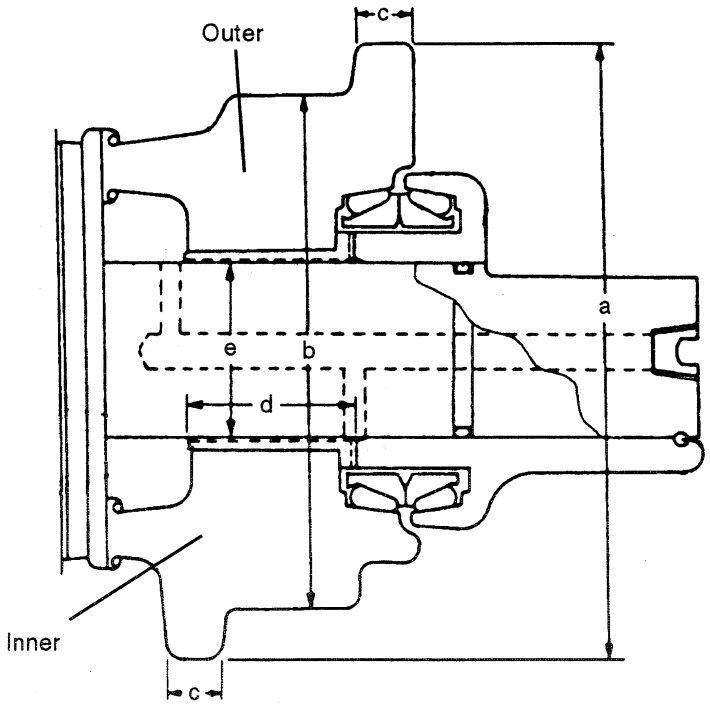
Bur 7-52711

TORQUE TABLE

Tighten cap screws and nuts according to the table below if there are no other special instructions.

Cap Screw Name Size (Size)			M6	M8	M10	M12	M14	M16	M18	M20
Cap Screw	Spanner	[mm]	10	13	17	19	22	24	27	30
		[in.]	0.39	0.51	0.67	0.75	0.87	0.95	1.06	1.18
	Tightening torque	[Nm]	6.9	15.7	32.3	58.8	98.0	137.2	196.0	274.0
		[lb-ft]	5.1	11.6	23.9	43.4	72.3	101.2	144.6	202.4
Socket Head Cap Screw	Spanner	[mm]	5	6	8	10	12	14	14	17
		[in.]	0.20	0.24	0.32	0.39	0.47	0.55	0.55	0.67
	Tightening torque	[Nm]	8.8	21.6	42.1	78.4	117.6	176.4	245.0	343.0
		[lb-ft]	6.5	15.9	31.1	57.8	86.8	130.1	180.8	253.1

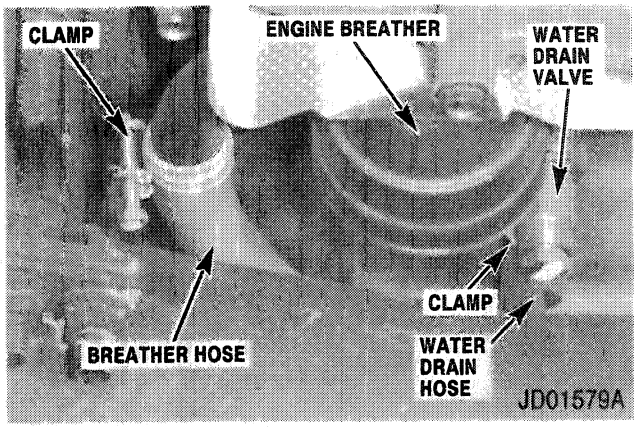
Lower Roller (Inside and Outside)				
Track Roller:	a	standard value	240 mm	9.45 in.
		service limit	235 mm	9.25 in.
	b	standard value	200 mm	7.87 in.
		service limit	195 mm	7.68 in.
	c	standard value	26 mm	1.02 in.
		service limit	25 mm	0.98 in.
Bushing:	d	standard value	85 mm	3.34 in.
		service limit	—	—
Shaft:	e	standard value	85 mm	3.34 in.
		service limit	84 mm	3.31 in.
Bushing:	e	standard value	85.3 mm	3.35 in.
		service limit	86.3 mm	3.40 in.

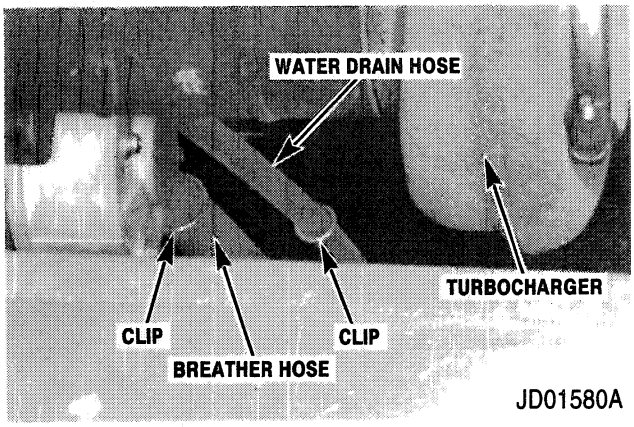


JS01714A

Lower Roller (Inside and Outside)

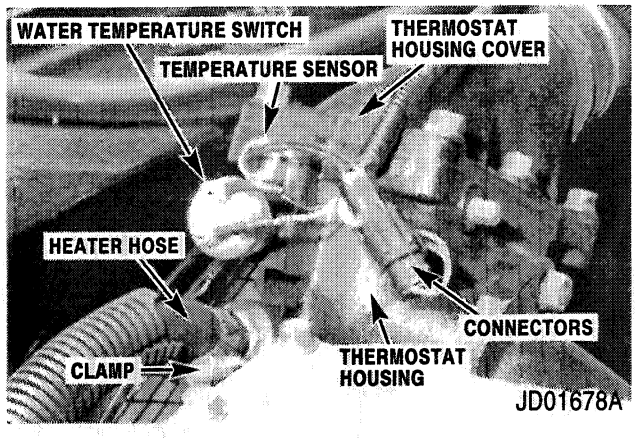
STEP 11





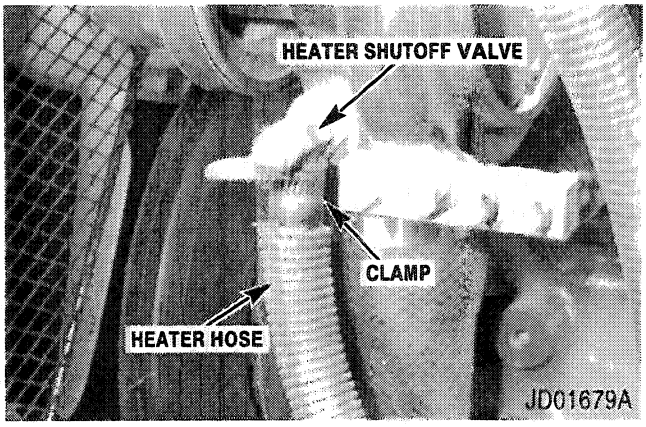
Loosen the clamp securing the breather hose and disconnect the breather hose. Using pliers, remove the clamp from the water drain hose connected to the water drain valve. Disconnect the water drain hose. Pull the hoses from the clips installed on the engine.

STEP 12



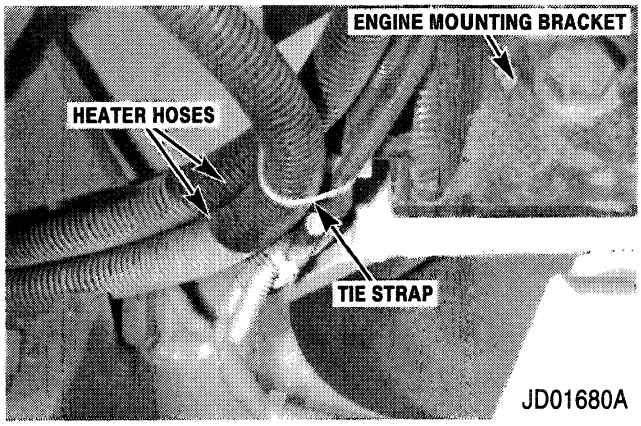
Disconnect the temperature sensor connector from the wiring harness connector. Tag and disconnect the wiring harness two wires from the water temperature switch. Loosen the clamp and disconnect the heater hose from the fitting installed in the thermostat housing.

STEP 13



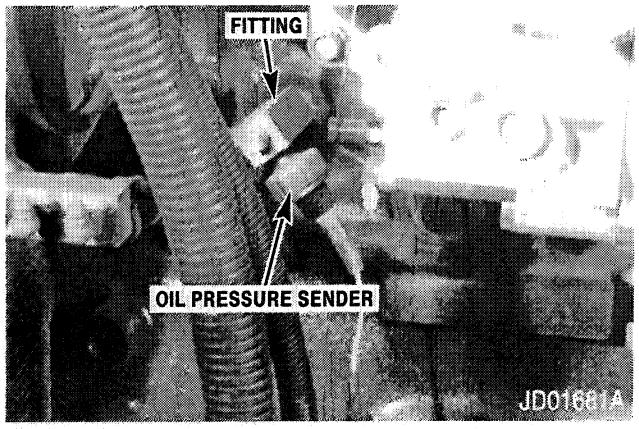
Loosen the clamp securing the heater hose to the heater shutoff valve. Disconnect the hose from the heater shutoff valve.

STEP 14



Cut, remove, and discard the tie strap holding the two heater hoses and the wiring harness to the engine mounting bracket.

STEP 15



Tag and disconnect the wiring harness wire connected to the oil pressure sender.

2000

Section

2000

(PIN NUMBER EAC0601026, EAC0611002 AND AFTER)

ENGINE

CASE CORPORATION

Bur 7-51980

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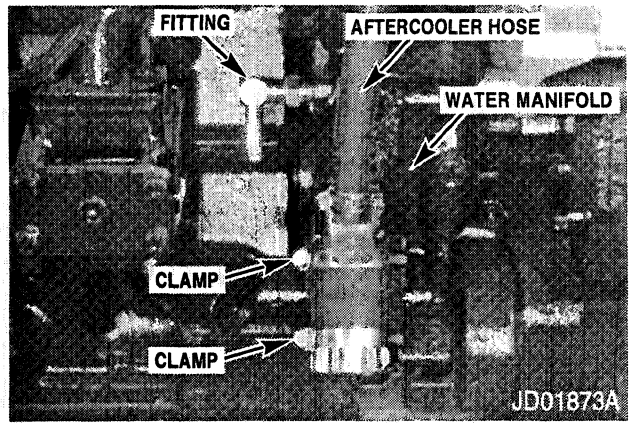
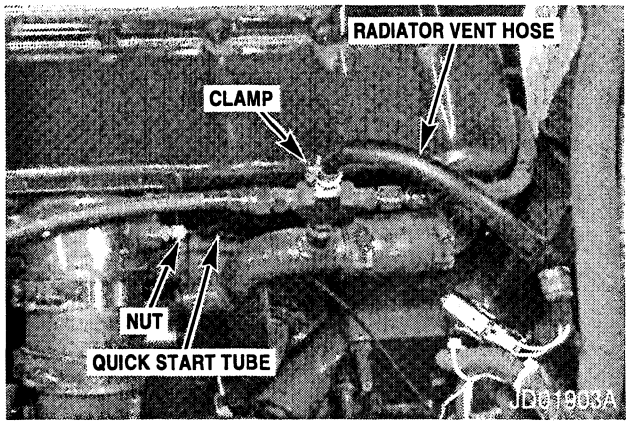
STEP 16



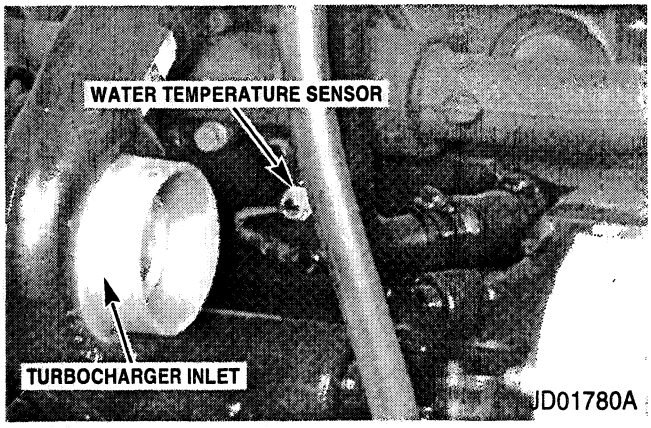
Connect the heater hose to the fitting installed in the water manifold. Position the clamp on the end of the heater hose and tighten the clamp. If the aftercooler hose was removed, connect the hose to the fitting. Position and tighten the clamp. Install the radiator bottom hose on the engine water manifold. Position and tighten the clamp.

STEP 17



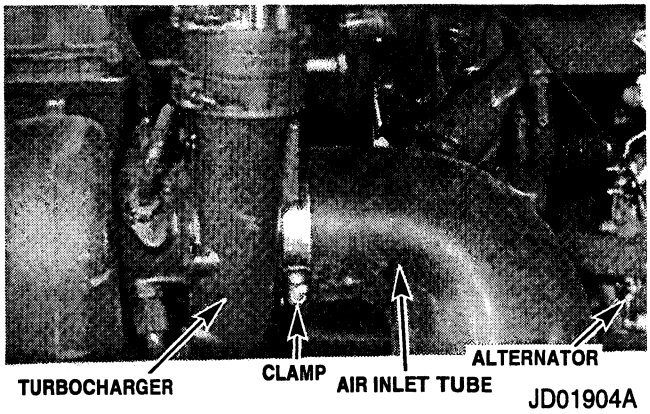
Connect the quick start tube to the fitting installed in the intake manifold. Tighten the nut to secure the tube. If the radiator vent hose was removed, connect the hose to the cross and tighten the clamp securely.

STEP 18



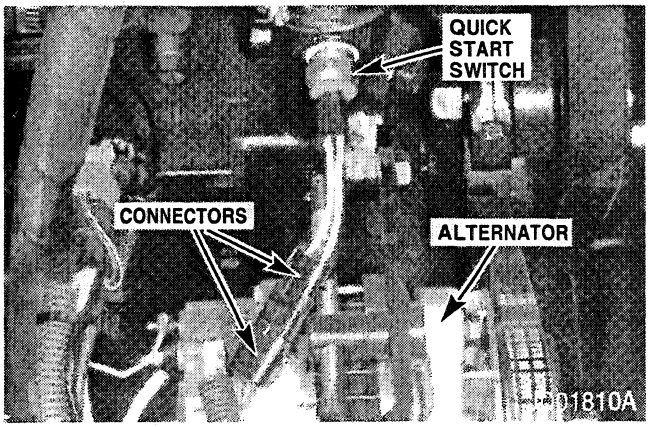
Connect the wiring harness connector to the water temperature sensor following the tag installed during removal. Remove and discard the tag.

STEP 19



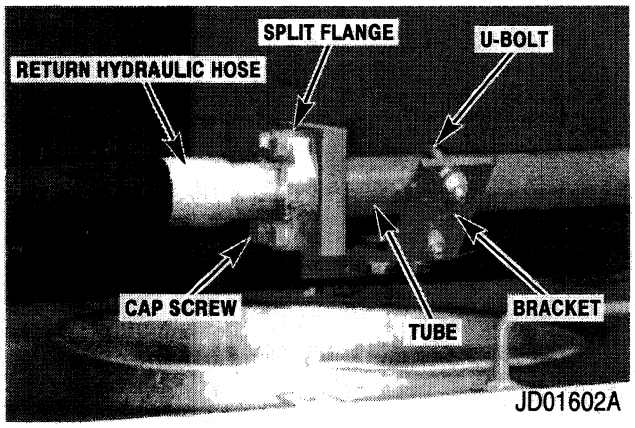
Connect the air inlet tube with the clamps installed to the turbocharger and the outlet tube of the air cleaner. Position the clamps and tighten securely.

STEP 20



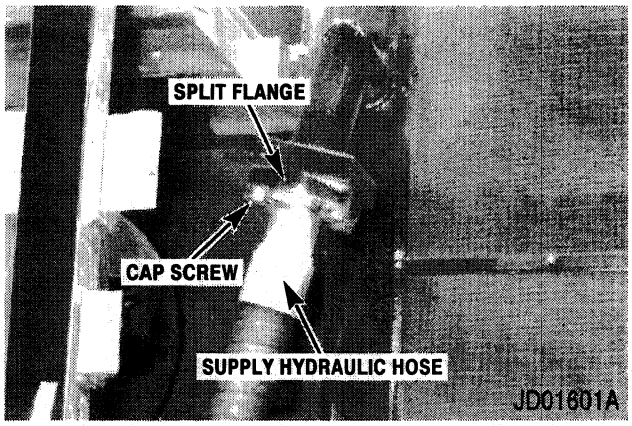
Connect the wiring harness connector to the quick start switch connector following the tag installed during removal. Remove and discard the tag.

STEP 6



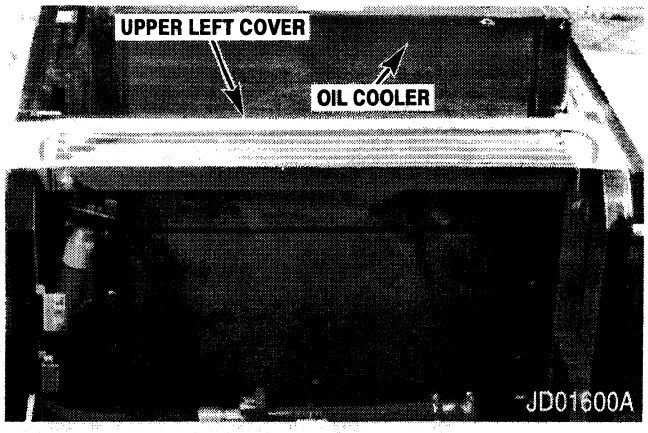
Install the bracket and the U-bolt. Install a new O-ring on the return hydraulic hose and connect the hose to the tube. Install the two split flanges and the four lock washers and cap screws. Tighten the cap screws and nuts to secure the coupling assembly. Tighten the four cap screws to secure the two split flanges.

STEP 7



Remove the plugs from the supply hydraulic hose and the oil cooler tube. Install a new O-ring in the supply hydraulic hose and connect the hose to the oil cooler tube. Install the two split flanges and four lock washers and cap screws.

STEP 8

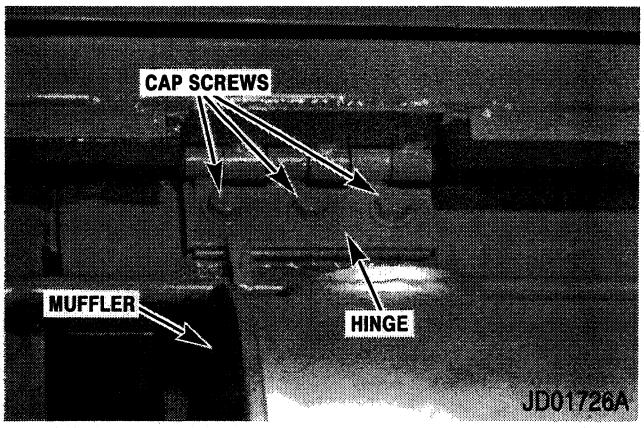


Install the upper left cover on the machine and secure using the four flat washers and cap screws.

STEP 9

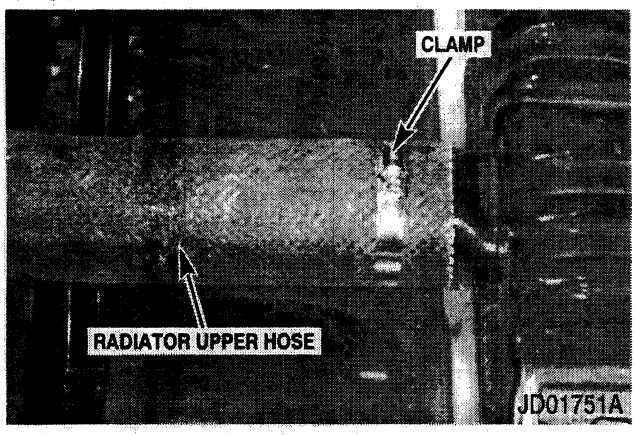
Connect suitable lifting equipment to the engine hood. Raise the engine hood into position above the engine compartment. Lower the engine hood while guiding it into position on the machine.

STEP 10



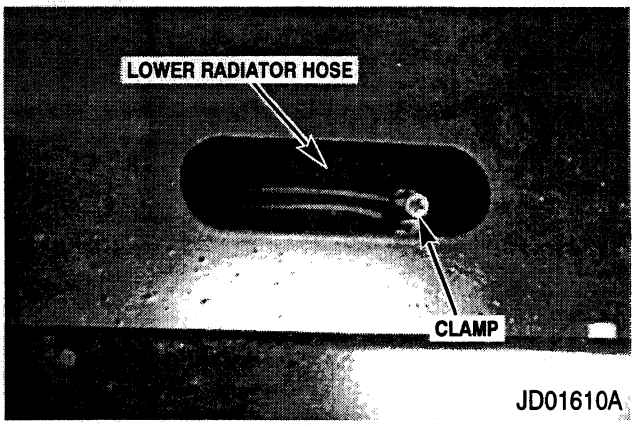
Install the nine flat washers and cap screws to secure the three hood hinges.

STEP 12



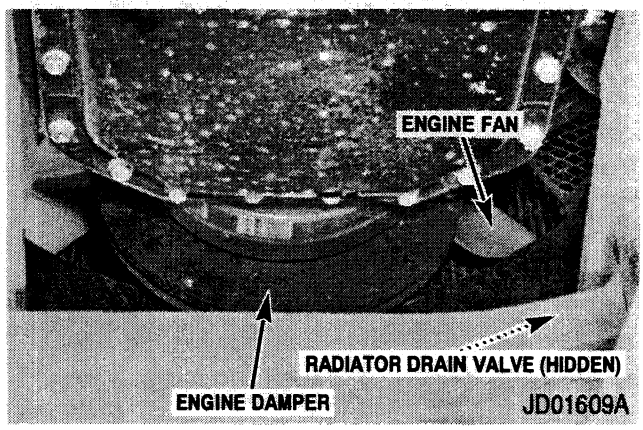
Connect the radiator upper hose to the radiator and tighten the clamp to secure the hose.

STEP 13



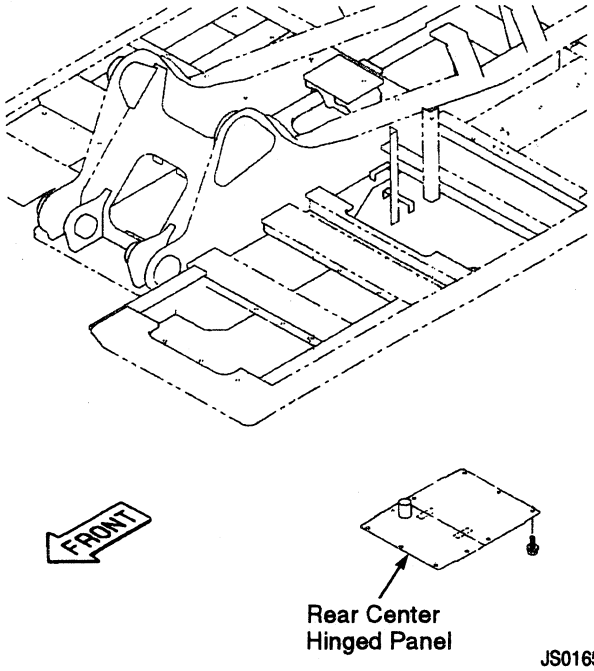
In the area beneath the engine where the rear center hinged panel has been dropped, reach up and connect the lower radiator hose to the radiator. Position the clamp on the hose so that the cap screw is facing downwards. Tighten the clamp.

STEP 14



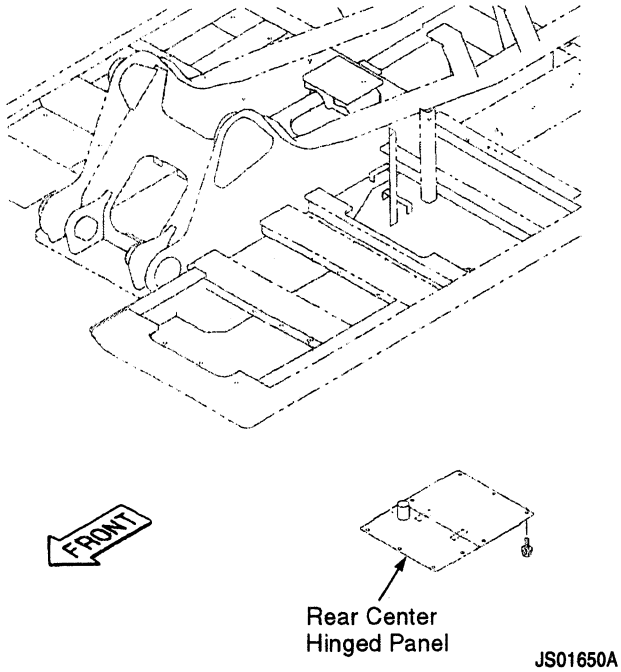
In the area beneath the engine where the rear center hinged panel has been dropped, reach up and close the radiator drain valve.

STEP 15



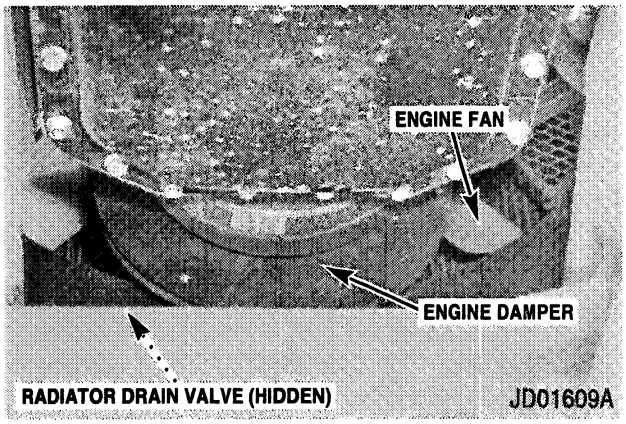
Swing the rear center hinged panel below the engine upward. Secure the panel using the five cap screws.

STEP 15



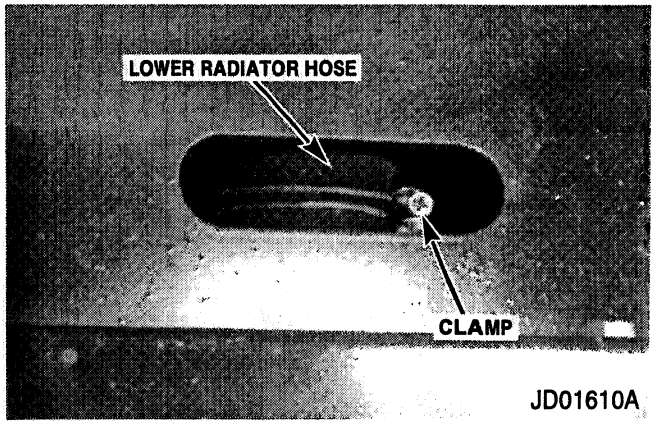
Remove the five cap screws securing the rear center hinged panel below the engine. Swing the panel down for access to the radiator drain valve and the radiator lower hose.

STEP 16



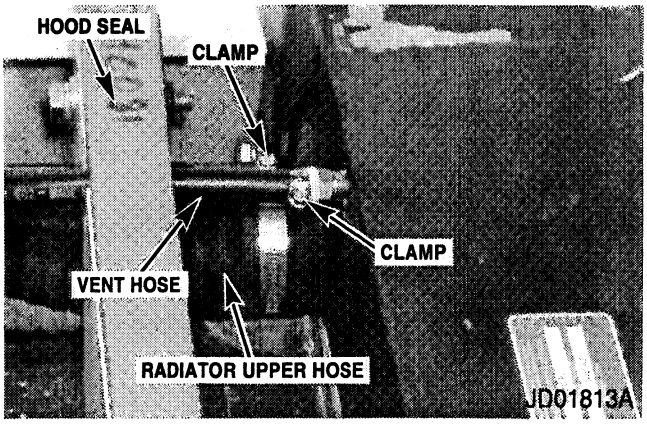
Place a 15 gallon (56.8 liters) container under the radiator drain hose. In the area beneath the engine where the rear center hinged panel has been dropped, reach up and open the radiator drain valve and drain the coolant. The cooling system holds 13 gallons (49 liters) of coolant.

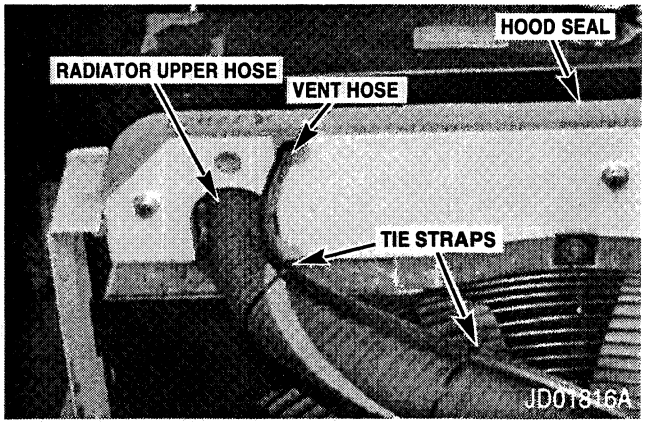
STEP 17



Loosen the clamp securing the radiator lower hose. In the area beneath the engine where the rear center hinged panel has been dropped, reach up and disconnect the lower radiator hose from the radiator.

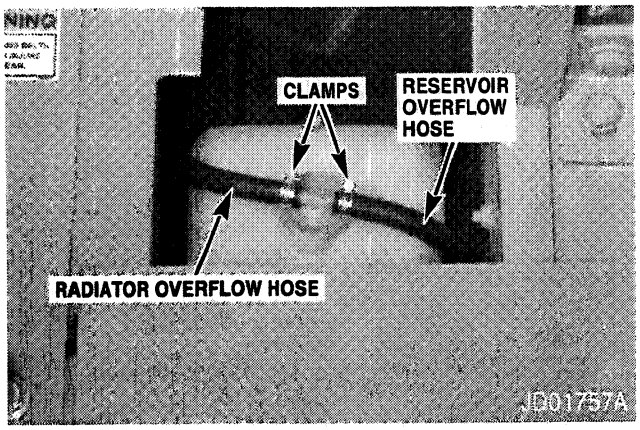
STEP 18





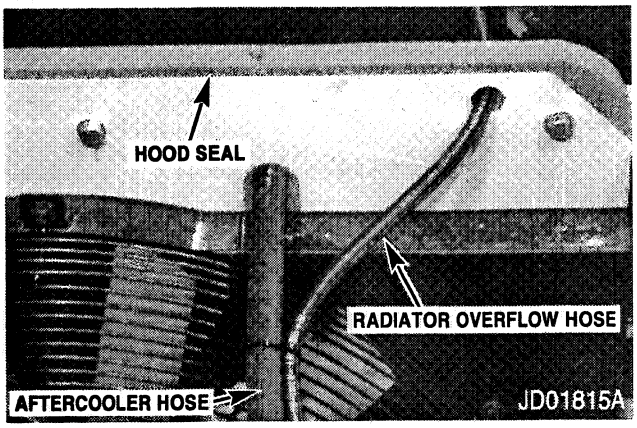
Loosen the two clamps. Disconnect the vent hose and radiator upper hose from the radiator by pulling the hoses through the hood seal. Cut, remove, and discard the two tie straps.

STEP 4



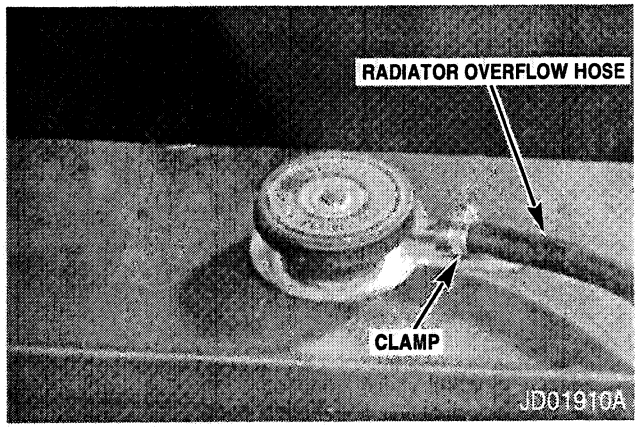
Connect the reservoir overflow hose to the reservoir and tighten the clamp. Connect the radiator overflow hose to the reservoir and tighten the clamp. Route the hose to the radiator.

STEP 5



Route the radiator overflow hose through the hood seal. Install two new tie straps to secure the radiator overflow hose to the aftercooler hose.

STEP 6



Connect the radiator overflow hose to the radiator. Tighten the clamp.

STEP 7

Fill the coolant reservoir with a solution of 55% ethylene glycol and 45% water up to the line on the middle of the reservoir.

STEP 8

Close and latch the engine hood.

STEP 9

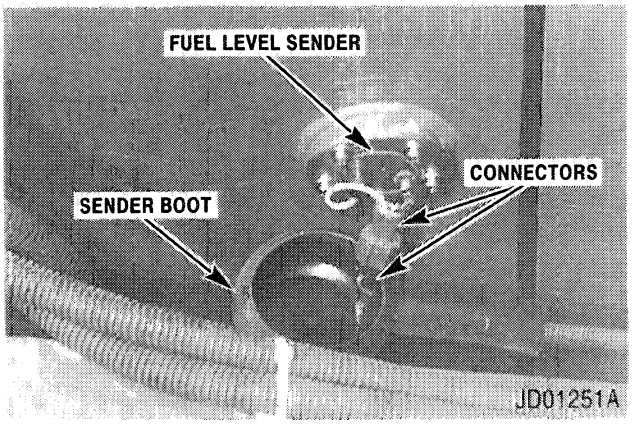
Remove the DO NOT OPERATE tag from the ignition key.

Installation

STEP 1

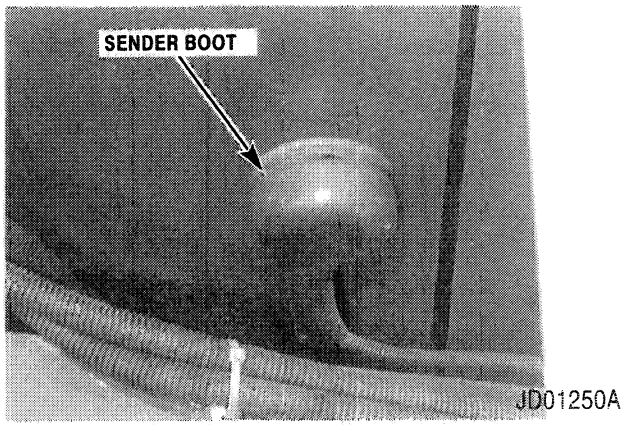
Place the shims on the machine. Connect suitable lifting equipment to the fuel tank and move the fuel tank into position on the machine. Lower the fuel tank on the machine. Be sure the shims are between the machine frame and the fuel tank. Apply Loctite 262 to the threads of the cap screws. Install the spacers and the cap screws to secure the fuel tank to the machine. Tighten the cap screws to a torque of 180 lb-ft (245 Nm). Disconnect the lifting equipment from the fuel tank.

STEP 2



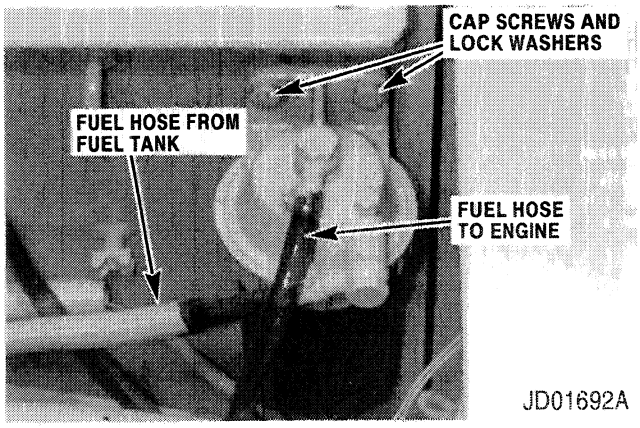
Connect the fuel level sender connector to the wiring harness connector.

STEP 3



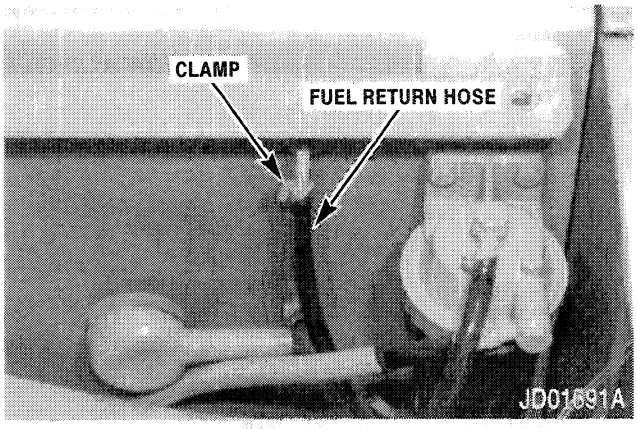
Pull the sender boot up on the wiring harness and position over the fuel level sender to cover the wire connections.

STEP 4



Position and support the water separator with the drain hose attached on the fuel tank. Install the two lock washers and cap screws to secure the water separator to the fuel tank. Connect the engine fuel hose and the fuel tank hose to the water separator following the tags installed during removal. Remove and discard the tags.

STEP 5



Connect the fuel return hose to the fuel tank elbow. Position the clamp on the hose and tighten to secure the hose.

Section

4001

ELECTRICAL SPECIFICATIONS AND TROUBLESHOOTING

9060B Excavator

CASE CORPORATION
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Rac 7-65310

Printed in U.S.A.
November, 1995

GENERAL OPERATION AND FUNCTION CHART

Operation	Function	Explanation
Battery Disconnect Delay	1) The battery relay remains on for 3 seconds after the key switch is turned off.	See page 25
Pilot Pressure Control	1) Pilot pressure can be disabled with either of two (Gate or Console) limit switches or a button on the left console. 2) If the button on the left console is used to disable the pilot, the pilot pressure will be on again after the key switch is turned off and then back on.	See page 26
Travel (Motion) Warning	1) With the travel warning switch on, the alarm will sound when the travel pressure switch is on. 2) If the travel warning switch is off, the alarm will sound for approximately 10 seconds after the travel pressure switch is activated.	See page 26
Power Transistor Protection	1) If a solenoid valve or relay is shorted, to protect the controller from damage, that circuit will shut off and the message "Elec Problem" will appear on the monitor. 2) The shorted circuit can be located in the Self Check Mode. 3) There are 20 protected circuits in the Controller.	See page 27
Monitor Display	1) The Monitor displays the system temperatures, fuel level, hydraulic mode selected, system warning messages and the time of day.	See page 28

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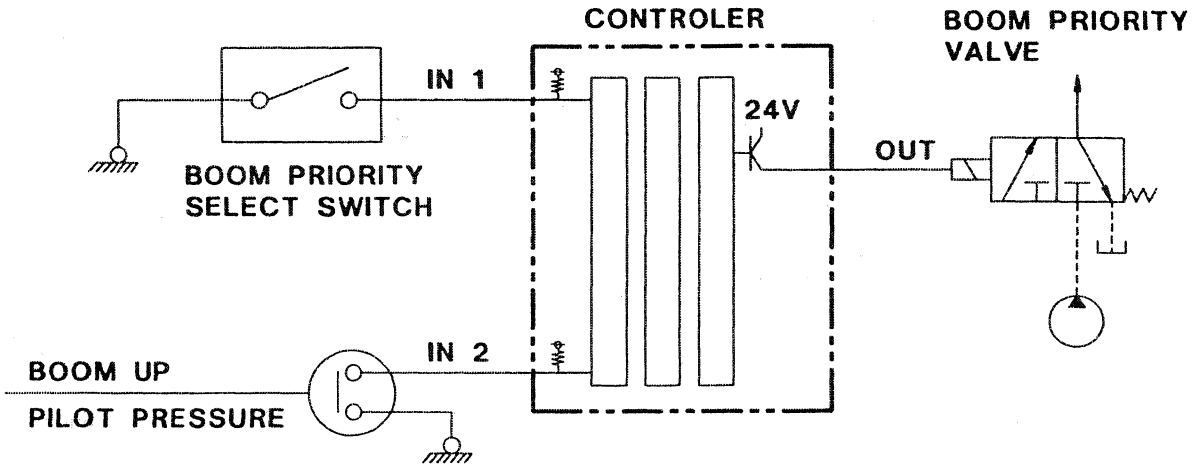
BOOM PRIORITY



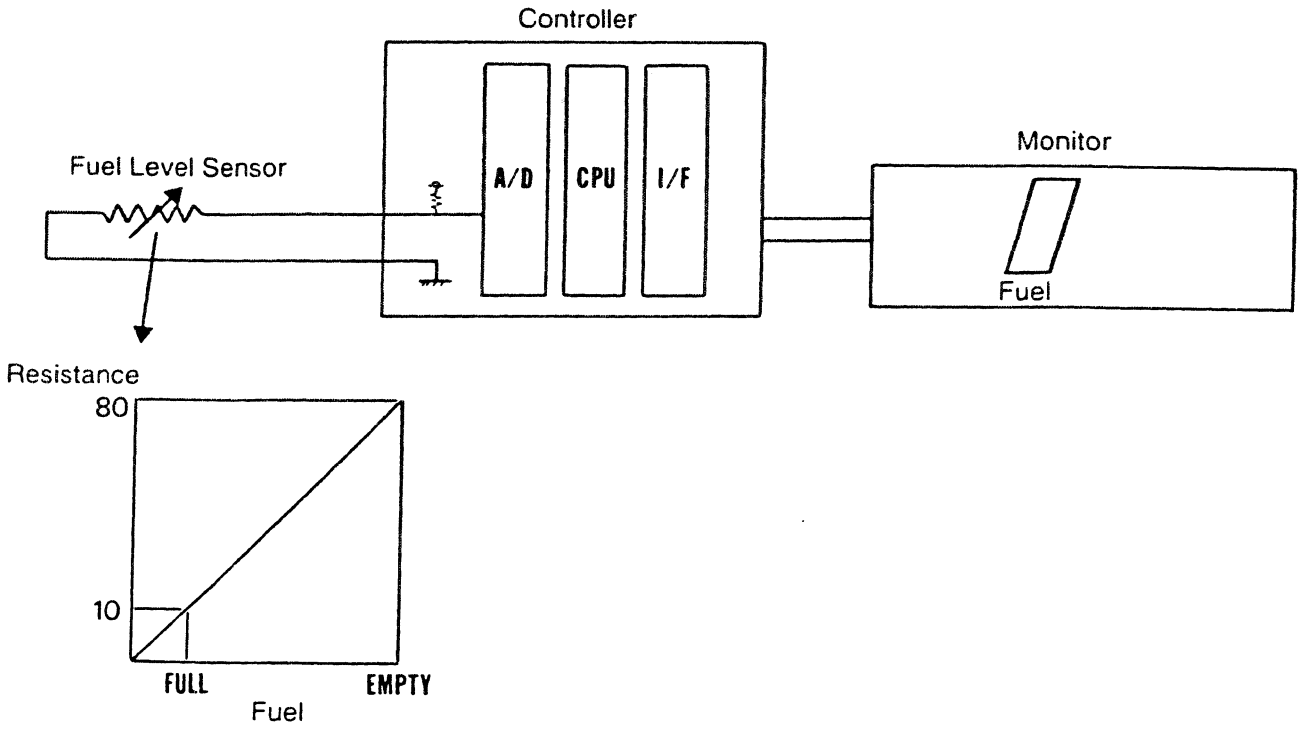
1. When boom priority is selected a restrictor will limit oil flow to the swing spool, and supplies more oil to the boom 2 spool.

If boom priority is selected the message screen will display **Boom Priority**. Nothing else will happen until the operator uses boom up. When the operator uses boom up, a pressure switch in the boom up pilot circuit will send a signal to the controller.

The controller will send a 24 Volt signal to the boom priority solenoid valve mounted behind the cab. The oil signal from the solenoid valve will shift a restrictor which will limit main pump oil flow to the swing spool, and supply more oil to the boom 2 spool.

The controller will send a 24 Volt signal to the boom priority solenoid valve mounted behind the cab. The oil signal from the solenoid valve will shift a restrictor which will limit main pump oil flow to the swing spool, and supply more oil to the boom 2 spool.

FUEL REMAINING



Values in the chart below are average.

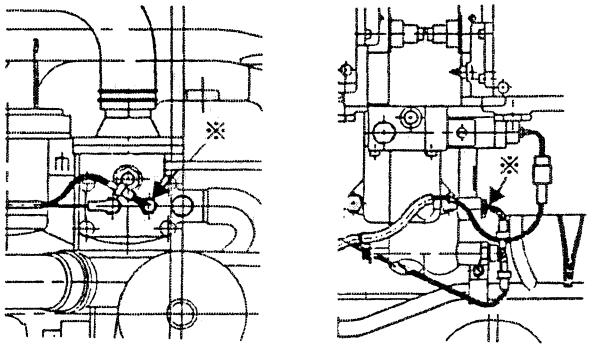
FUEL TANK	9060B Amount (L)	9060B Resistance (OHM)	MONITOR
	284~	13~10	8
	243~284	21~13	7
	200~243	27~21	6
	158~200	34~27	5
	115~158	44~34	4
	72~115	59~44	3
	39~72	78~59	2
	~39	80~78	1 1 hour left. Refuel.

The fuel level sensor monitors fuel tank level.

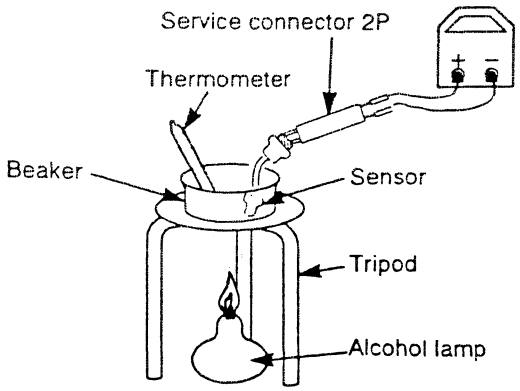
Fuel level sensor resistance varies as fuel level increases or decreases. As fuel level decreases, sensor resistance increases.

Monitor lamps turn ON or OFF when a resistance range is reached, and when ON/OFF conditions of other lamps are sensed.

WATER TEMPERATURE SENSOR, OIL TEMPERATURE SENSOR



1. Remove the water temperature sensor or the oil temperature sensor.



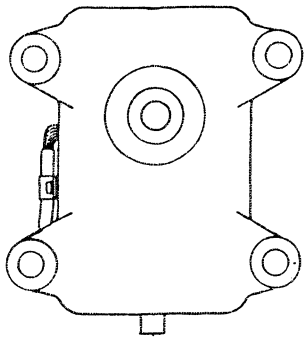
2. Connect the service connector for 2P to the sensor which was removed.

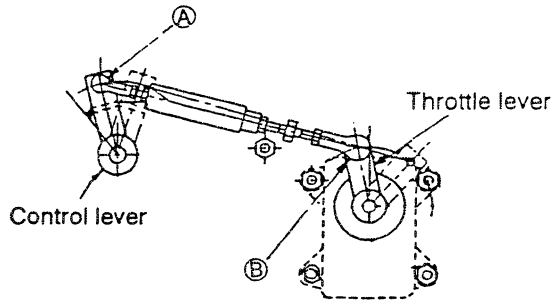
3. To connect to the tester, connect the red/black terminal to the spade terminal of a service connector.

Water temp. (Oil temp.)	Lower value	Upper value
20℃	8.00k Ω	10.20k Ω
30℃	5.35k Ω	6.50k Ω
40℃	3.60k Ω	4.55k Ω
50℃	2.50k Ω	3.10k Ω
60℃	1.70k Ω	2.20k Ω
70℃	1.20k Ω	1.55k Ω
80℃	0.85k Ω	1.15k Ω

4. After completing the connection, increase temperature gradually, and confirm the resistance.

THROTTLE MOTOR AND THROTTLE LINK REPLACEMENT





1. Delivery of the throttle motor.
   At the time of delivery the throttle motor and position of the output axis is not decided, so adjustment is as follows.

   *Connect the wiring of the throttle motor, switch it to redundancy, and position it so the output axis is moved counterclockwise in the throttle switch (UP).

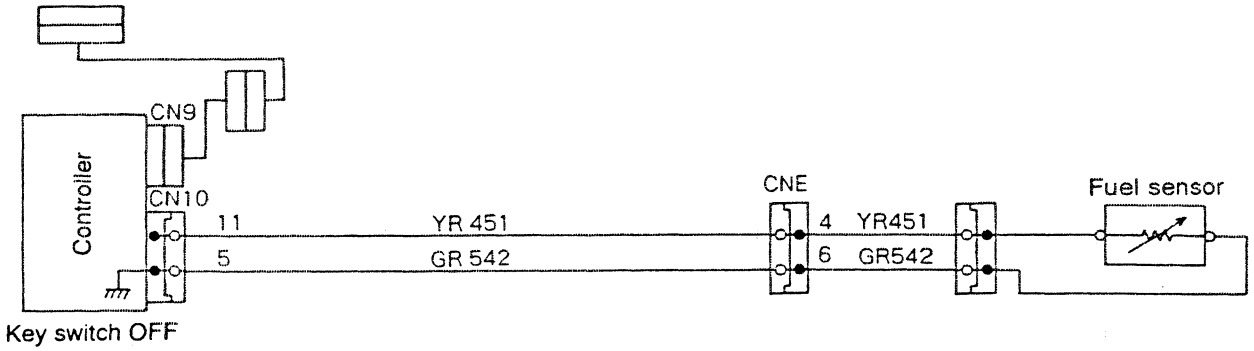
2. Removal of the throttle link.
   Loosen the mounting nuts of the control link side A and lever side B of the throttle motor, and remove the throttle link as an assembly.

REFUEL

Problem Description (No. 2)

- Message does not go out even if refueled.

Prior Confirmation Items
1. The "MODE" of the mode display is not flashing.
2. Fuel bar graph displays one.



Troubleshoot	Cause	Remedy
Key switch ON: Measure resistance value of sensor at self-check. Is it within the range of values in chart below? (Refer to resistance values in chart below.) — YES	Controller defect	Replace controller.
NO → Key switch OFF: Remove sensor coupler and measure resistance on sensor side. Is it within the range of values in chart below? (Refer to resistance values in chart below.) — NO	Fuel sensor defect	Replace sensor or inspect it.
YES → Remove CNE connector and measure resistance between male side terminal YR and GR. Is it within the range of values in chart below? (Refer to resistance values in chart below.) — NO	Bad connection of fuel sensor connector	Clean connector terminal.
YES → Remove CN10 connector and measure resistance between female side terminal YR and GR. Is it within the range of values in chart below? (Refer to resistance values in chart below.) — NO	Bad connection of CNE	Clean CNE connector terminal.
YES	Controller defect or bad connection of CN10	Replace controller or clean CN10 connector terminal.

Note) When there is breakage in the wiring, the bar graph goes out completely.

Resistance Value Between YR and GR

Monitor	1 Refuel.	2	3	4	5	6	7	8
Resistance Value (OHM)	80–78	78–59	59–44	44–34	34–27	27–21	21–13	13–10

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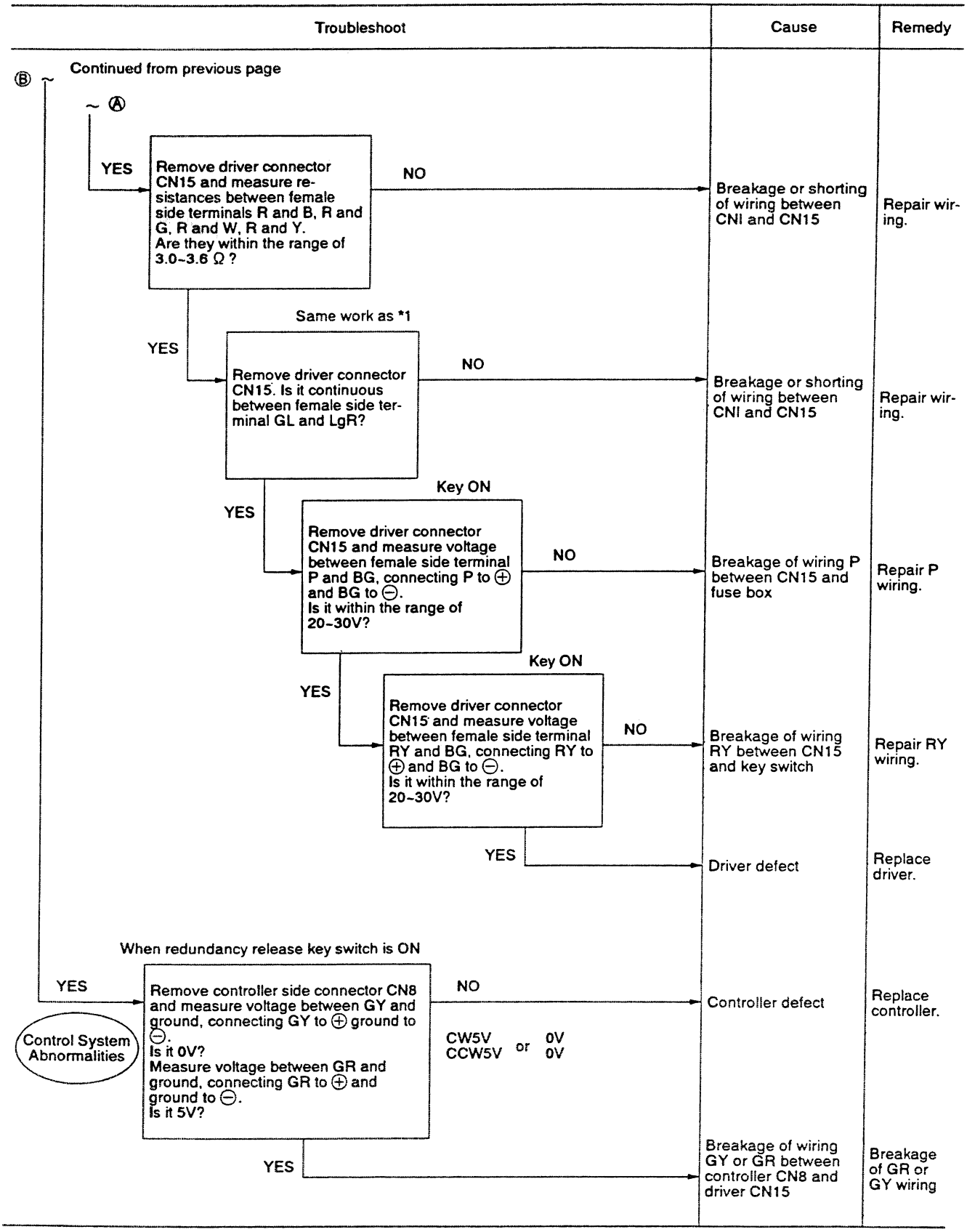
ELECTRICAL SYSTEM TROUBLESHOOTING



PREPARING A DRY CHARGED BATTERY FOR USE

1. Remove the caps from the battery.

2. Fill each cell to the top of the separators with electrolyte. This will permit the volume of electrolyte to increase when heated by charging the battery.

3. Install the caps on the battery.

4. Connect a battery charger to the battery.

5. Charge the battery at 30 amperes until the specific gravity is 1.250 or more and the temperature of the electrolyte is at least 15.5°C (60°F).

6. If necessary fill each cell with electrolyte until the electrolyte is just below split ring at the bottom of the cell opening.

TRACK ADJUSTMENT CYLINDER 53
Removal 53
Disassembly 54
Inspection 55
Assembly 56
Installation 58

LEAKAGE TEST 59

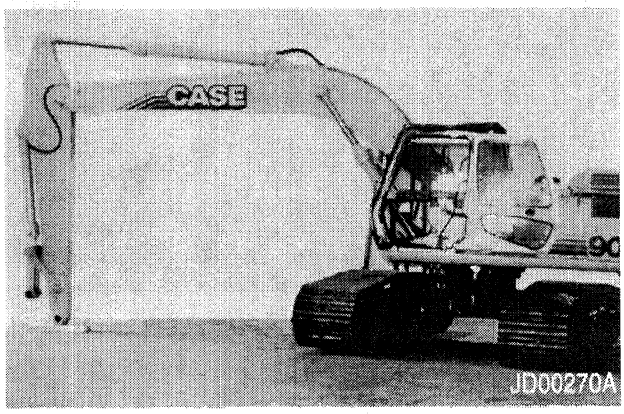
TRACK TENSION ADJUSTMENT

Check the tension of the tracks as required. Adjust the tension for the type of surface the machine will be operating on. Tighten the track for operation on hard surfaces and loosen the track for operation on soft surfaces.

STEP 1

Park the machine on a hard level surface. Rotate the upper structure of the machine so that the cab is over the track to be checked.

STEP 2

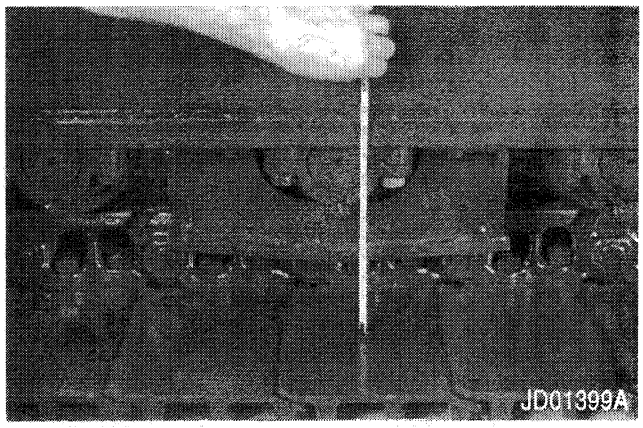


Lower the bucket or tool to raise the machine until the track to be checked is one to two inches from the ground.

NOTE: *If the machine does not have a bucket or tool installed, install wood blocks under the arm and lower the arm onto the wood blocks. Then, lower the arm to raise the machine.*

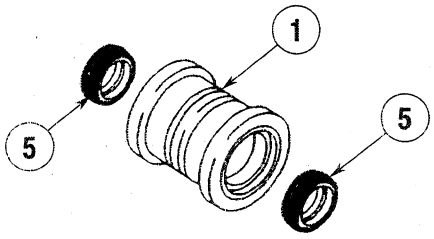
STEP 3

WARNING: *Do not put your feet under the tracks of the machine when the tracks are raised above the ground. Injury can result if the machine is accidently lowered back to the ground.* SA158



Measure the distance between the bottom surface of the track frame and the top surface of the track shoe. The amount of track deflection must be 11 to 11.8 inches (280 to 300 mm).

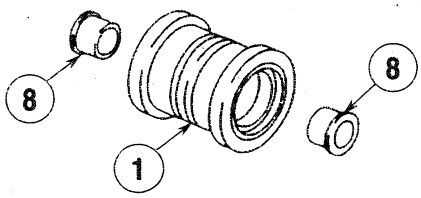
STEP 5



JS00305A

Remove and discard face seal (5) from track roller (1) or shaft (6).

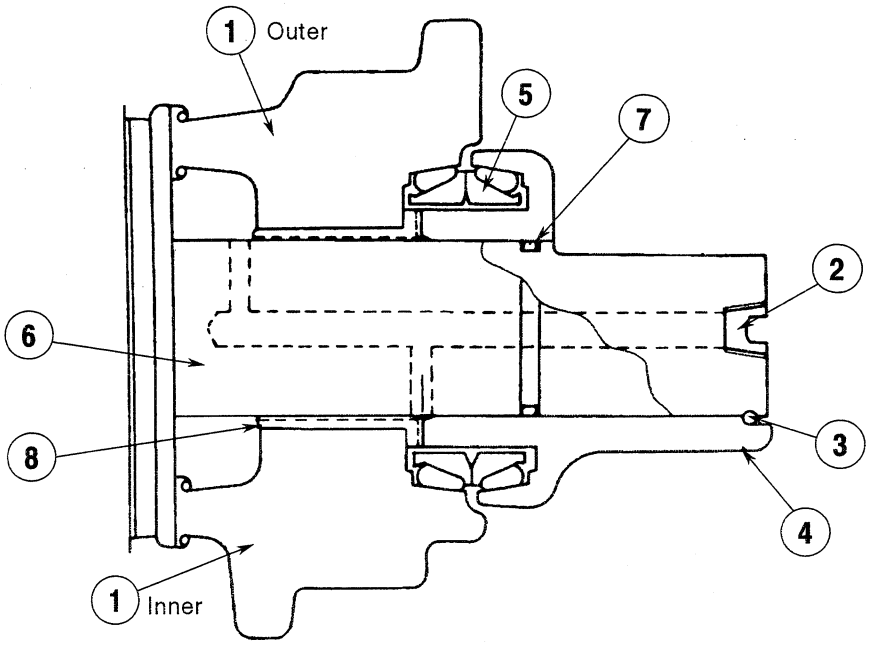
STEP 6



JS00306A

NOTE: *Do this step only if Inspection step 3, page 24 indicates bushings (8) require replacement.*

Using a hammer and brass punch, drive the bushings (8) from the track roller (1). Be careful not to damage the seal bore in the track roller. Discard bushings.

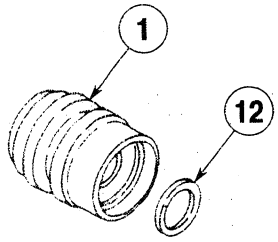


JS01654A

Track Roller (Side View)

1. *Track Roller*
2. *Drain Plug*
3. *Retaining Ring*
4. *Bracket*
5. *Face Seal*
6. *Shaft*
7. *O-Ring*
8. *Bushing*

STEP 5

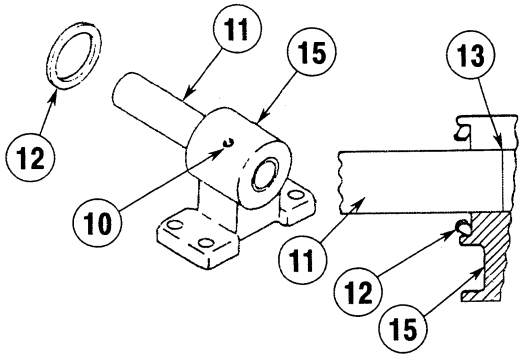


JS01661A

Remove and discard the face seal (12) from the carrier roller (1) using a screwdriver or other suitable tool. Be careful not to damage seal bore in carrier roller. Discard face seal.

NOTE: *Face seal (15) consists of four parts: two rubber rings and two metal rings. When carrier roller (1) is removed, one rubber ring and metal ring will remain in carrier roller seal bore; the other rubber ring and metal ring will be in bracket (14) seal bore.*

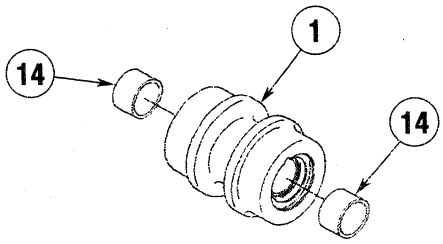
STEP 6



JS01662A

Remove and discard the face seal (12) from the bracket (15) using a screwdriver or suitable tool. Be careful not to damage the seal bore in the bracket. If shaft (11) requires replacement, remove and discard roll pin (10). Remove the shaft from the bracket (15) and remove and discard the O-ring (13).

STEP 7

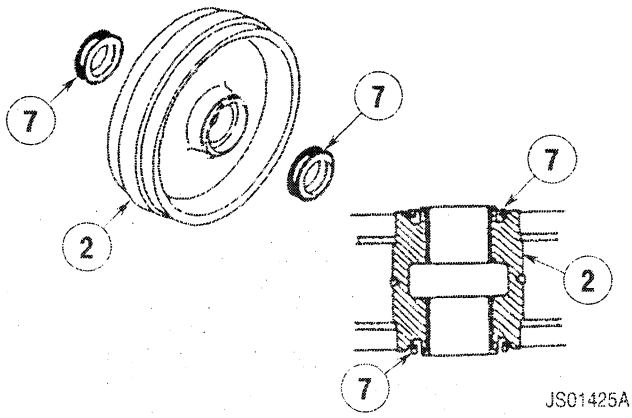


JS01419A

NOTE: *Do this step only if inspection (step 3, page 34) indicates bushings (14) require replacement.*

Using a hammer and brass punch, drive the bushings (14) from the carrier roller (1). Be careful not to damage the seal bore in the carrier roller.

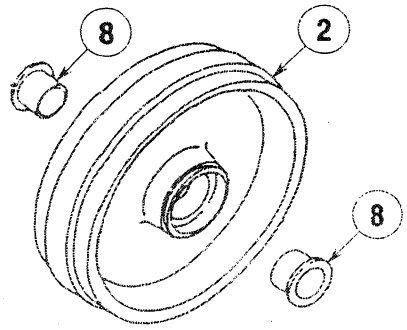
STEP 6



JS01425A

Remove and discard the face seal (7) from the idler wheel (2) using a screwdriver or suitable tool. Be careful not to damage the seal bore in the idler wheel.

STEP 7



JS01426A

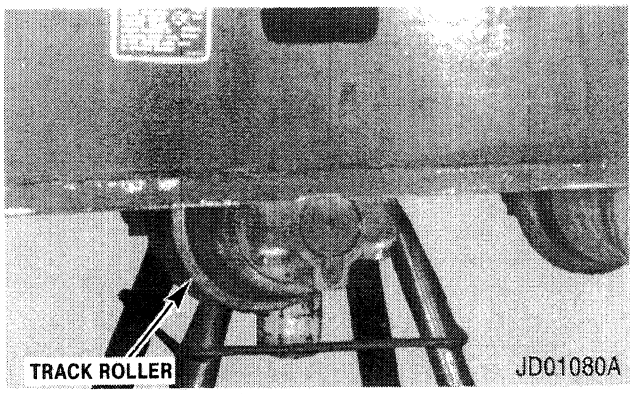
NOTE: *Do this step only if inspection (step 3) indicates bushings (8) require replacement.*

Using a hammer and brass punch, drive the bushings (8) from the idler wheel (2). Be careful not to damage the seal bore in the idler wheel.

TRACK ADJUSTMENT CYLINDER

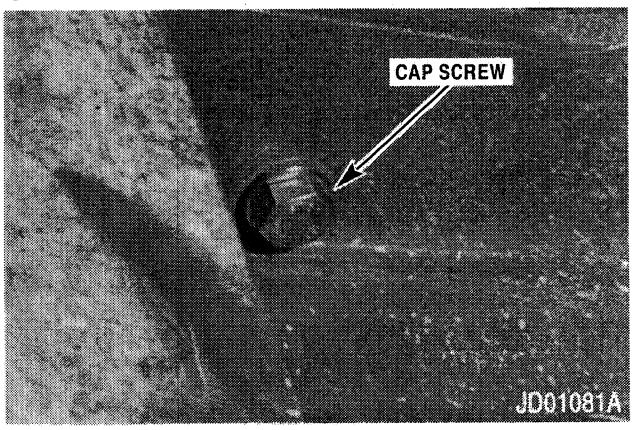
Removal

STEP 1



See Track Roller Removal and do steps 1 through 6 to remove the center track roller and the track roller beneath the track adjustment cylinder.

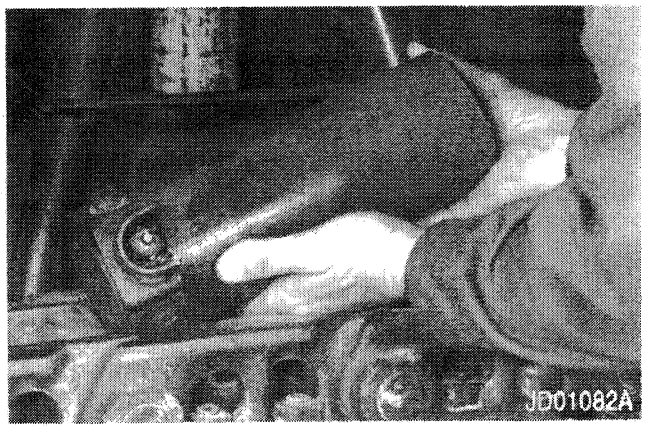
STEP 2



NOTE: *Do not position any part of your body below the track adjustment cylinder. To do so could cause injury due to the track adjustment cylinder falling from the machine when the cap screws securing it are removed.*

Loosen the track adjustment cylinder check valve. Install wood blocks beneath the track adjustment cylinder to prevent it falling from the machine when the two cap screws securing it to the machine are removed. Support the track adjustment cylinder and remove the two cap screws (1, page 56) and flat washers (2).

STEP 3



Use a prybar to push the track adjustment cylinder piston rod into the cylinder tube. Grease will flow from the check valve. Remove the track adjustment cylinder from the machine.

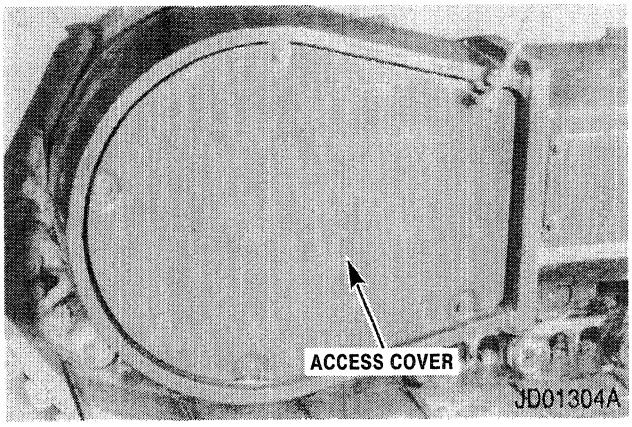
COUNTERBALANCE VALVE

Removal

STEP 1

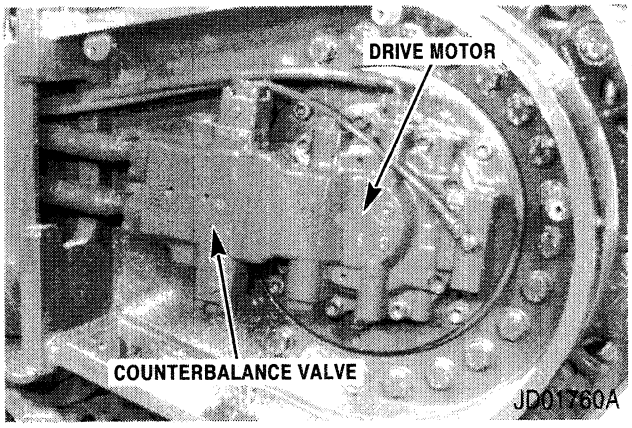
To help prevent loss of hydraulic oil when the hydraulic hoses for the drive motor are disconnected, connect a vacuum pump to the hydraulic reservoir (see Section 8000).

STEP 2



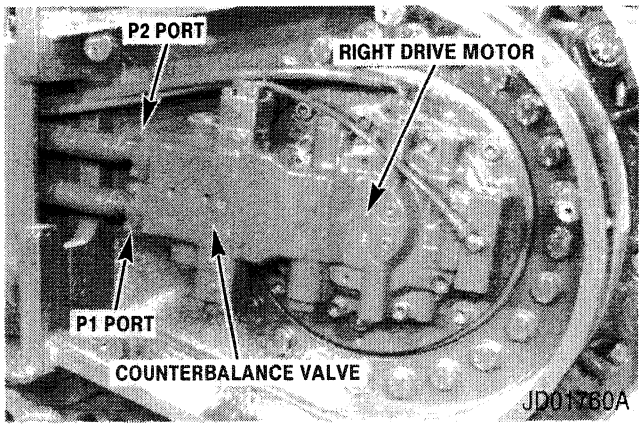
Remove the cap screws, lock washers, and flat washers holding the access cover to the track frame. Remove the access cover.

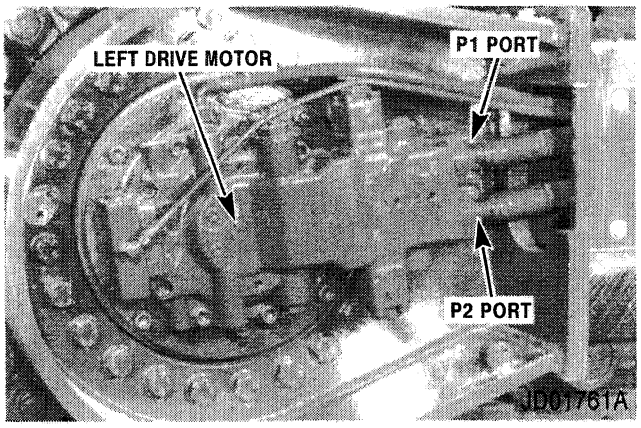
STEP 3



Clean the counterbalance valve and the drive motor and the area around the counterbalance valve and the drive motor.

STEP 4





Install identification tags on the hydraulic hoses connected to the counterbalance valve to aid in installation. Have ready the plugs to plug the hydraulic hose ends and the caps to plug the valve and motor ports. Place a container under the hydraulic hose connections to catch any hydraulic oil that may drain from the hydraulic hoses when they are disconnected.

FINAL DRIVE TRANSMISSION

Removal

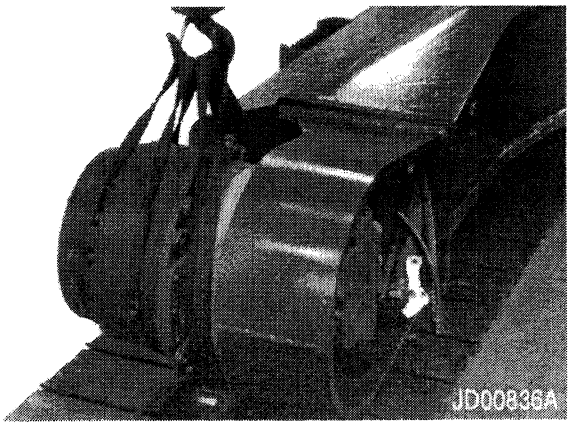
STEP 1

Refer to Section 5002 and do steps 1 through 10 of Track Removal and steps 1 through 6 of the Sprocket Removal.

STEP 2

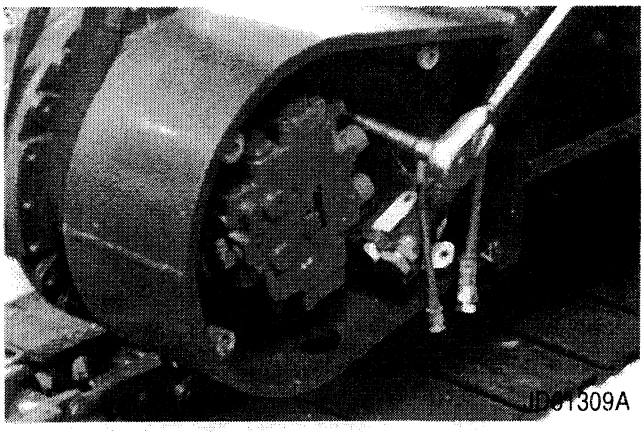
Refer to Drive Motor Removal in this section and do steps 1 through 14.

STEP 3



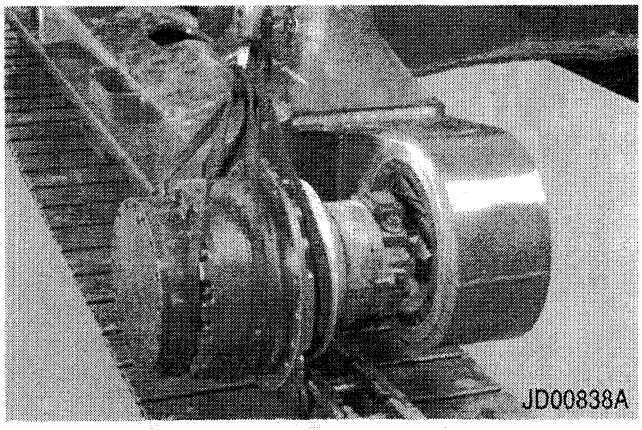
Connect suitable lifting equipment to the final drive transmission.

STEP 4



Remove the cap screws and flat washers that hold the final drive transmission to the track frame.

STEP 5

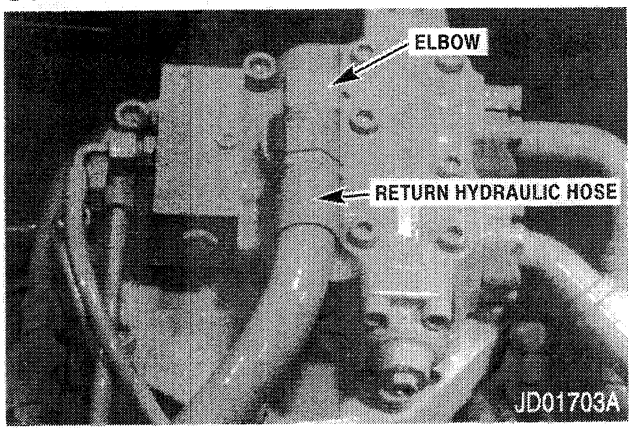


Remove the final drive transmission from the machine.

STEP 13

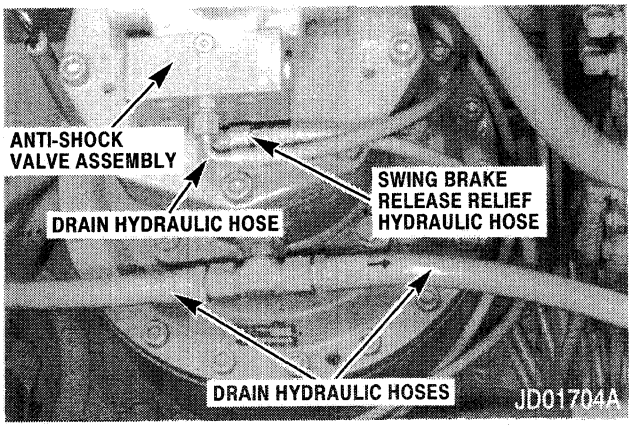
Turn on the vacuum pump. (See Section 8000).

STEP 14



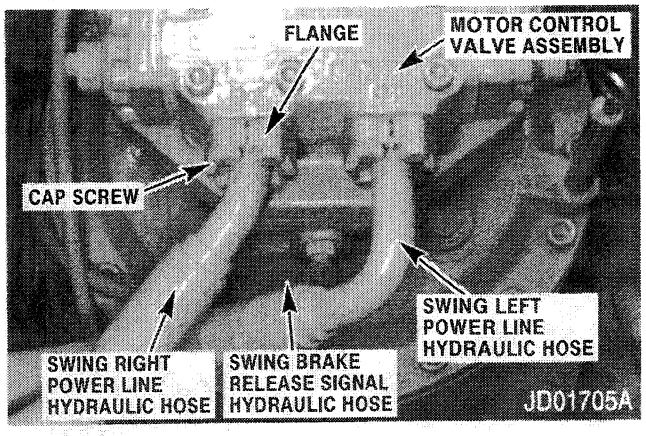
Disconnect the return hydraulic hose from the elbow. Plug the hose and cap the elbow.

STEP 15



Disconnect the drain hydraulic hose and the swing brake release relief hydraulic hose from the anti-shock valve assembly. Disconnect the two drain hydraulic hoses from the tee. Plug the hoses and cap the fittings.

STEP 16

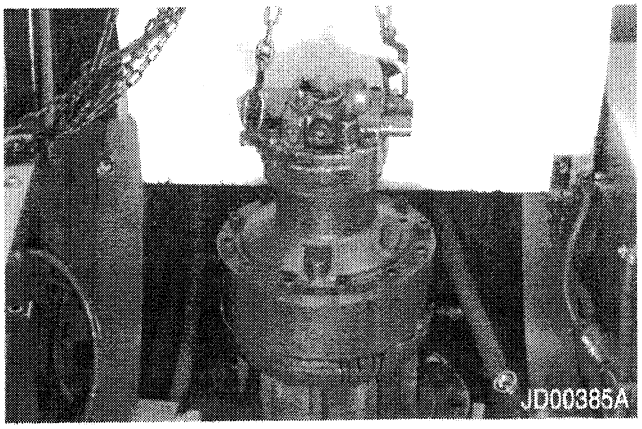


Remove the eight cap screws, lock washers, and four flanges. Disconnect the swing left and swing right power line hydraulic hoses from the motor control valve assembly. Remove and discard the O-rings. Plug the ports and the hydraulic hoses. Disconnect the swing brake release signal hydraulic hose from the elbow installed in the right side of the swing motor. Cap the elbow and plug the hose.

STEP 17

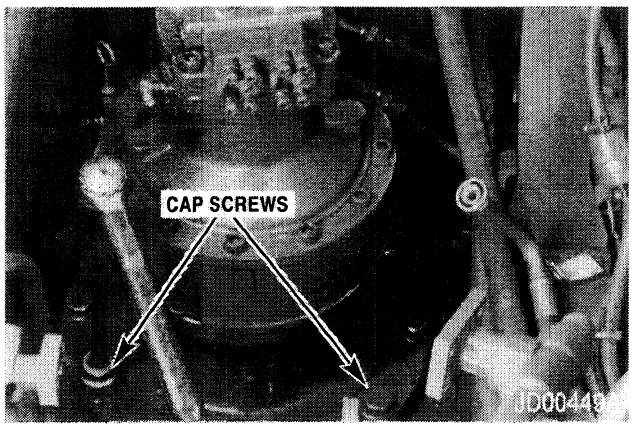
Turn off the vacuum pump.

STEP 18



Connect suitable lifting equipment to the swing motor.

STEP 14

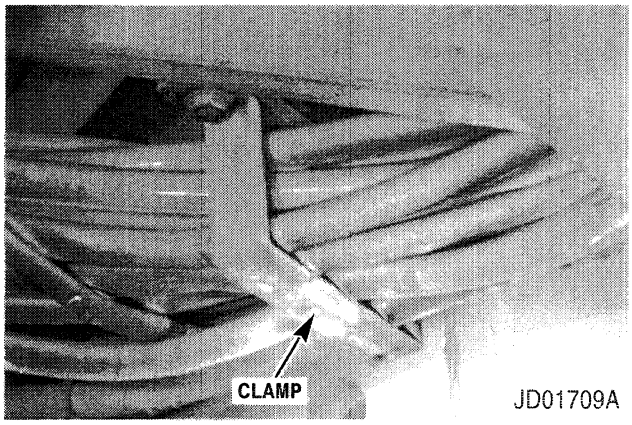


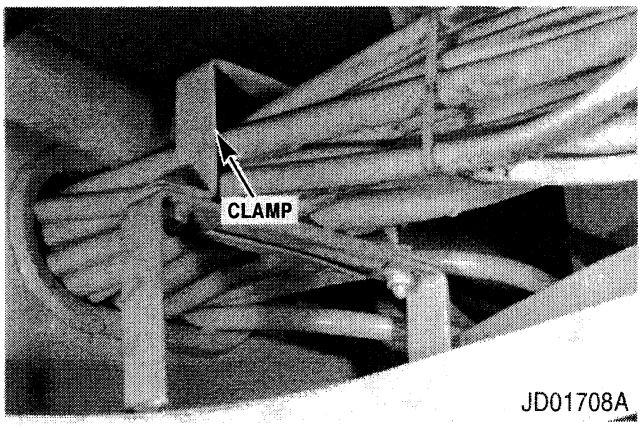
Apply Loctite 262 to the threads of the twelve cap screws. Install the flat washers and cap screws. Using a calibrated torque wrench, tighten the cap screws alternately to 665 to 775 lb-ft (900 to 1050 Nm).

STEP 15

Release the hand pump CAS-10090 hydraulic pressure and disconnect from the swing motor brake release port. Disconnect the lifting equipment from the swing motor.

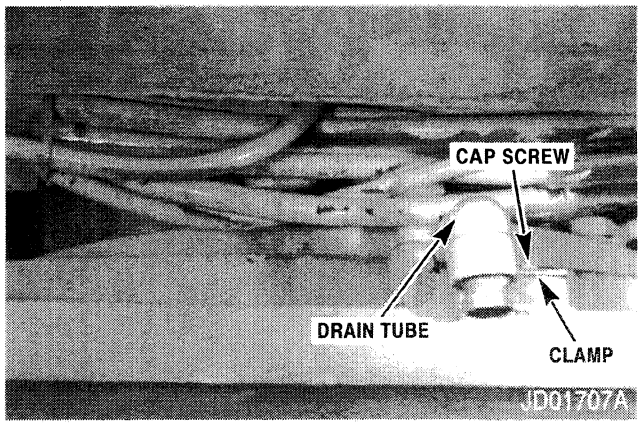
STEP 16





At the bottom of the machine, in the area between the swing reduction gear and the hydraulic control valve, install the two clamps to secure the hydraulic hoses to the machine.

STEP 17

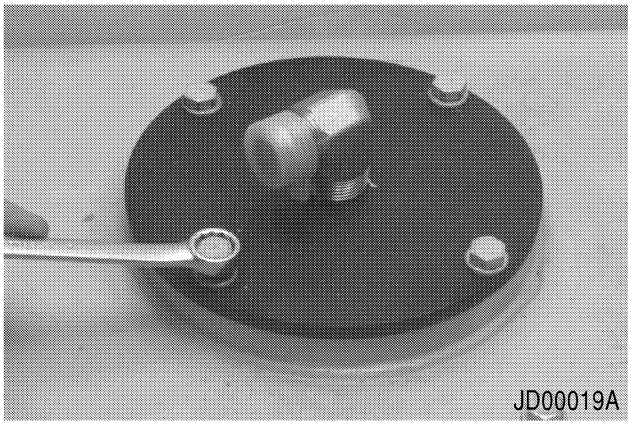


At the bottom of the machine, in the area between the two clamps installed in step 16, reach up and install the clamp, flat washer, and the cap screw to secure the swing reduction gear drain tube to the machine.

STEP 33

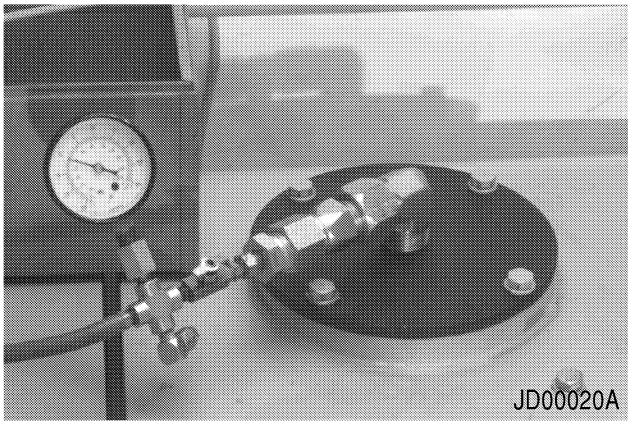
Remove the long tube from the hydraulic reservoir.

STEP 34



Install the flow test adapter plate on the hydraulic reservoir. Secure using the four flat washers and cap screws removed in step 9.

STEP 35



Connect a vacuum pump to the elbow installed in the flow test adapter plate.

STEP 36

Close the valve installed in the bottom of the hydraulic reservoir.

STEP 37

Disconnect the portable filter inlet hose from the valve.

STEP 38

Turn on the vacuum pump.

STEP 39

Remove the valve from the reducer installed in the bottom of the hydraulic reservoir.

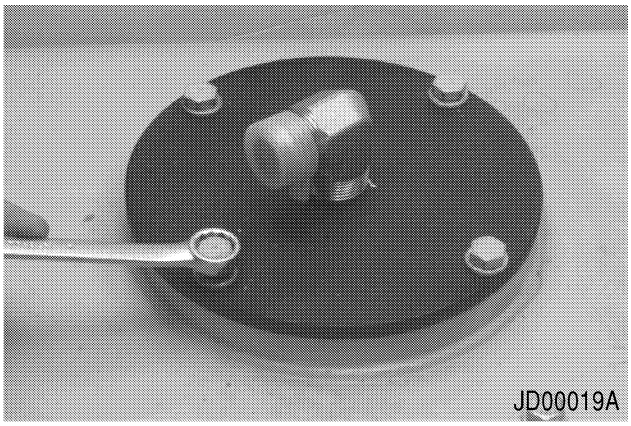
STEP 40

Install and tighten the drain valve. Check that the drain valve is closed.

STEP 41

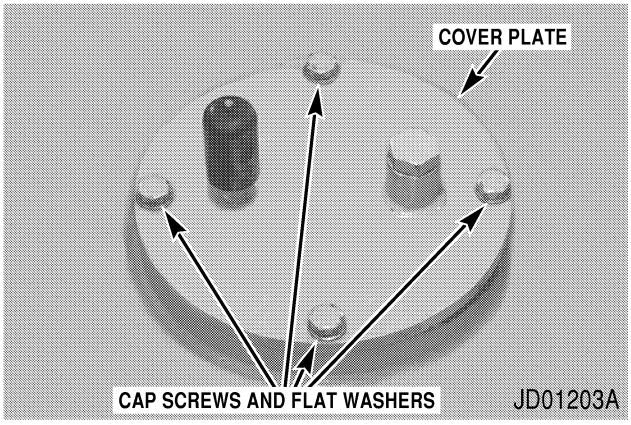
Turn off the vacuum pump and disconnect it from the hydraulic reservoir.

STEP 42



Remove the flow test adapter plate from the hydraulic reservoir.

STEP 43

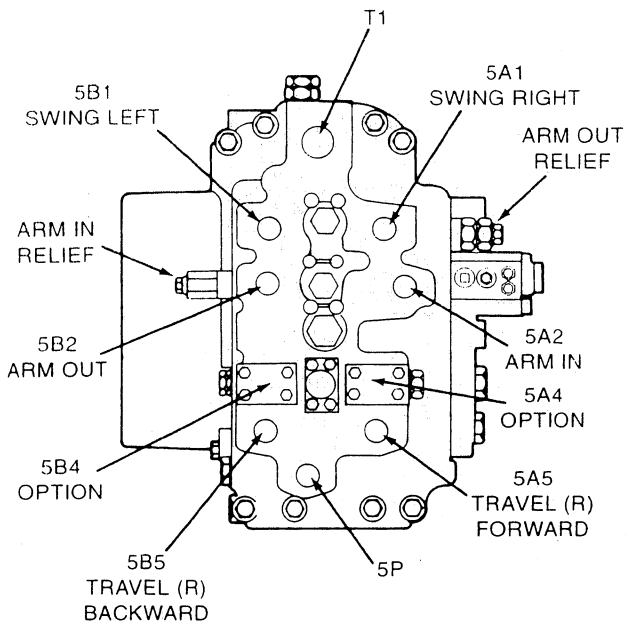


Using a new O-ring, install the cover plate on the hydraulic reservoir. Install the four flat washers and cap screws.

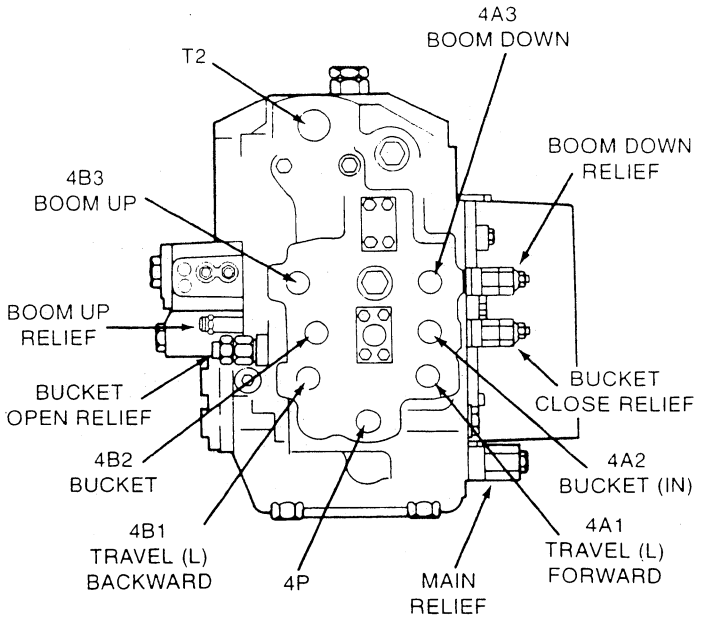
STEP 44

Remove the portable filter from the machine.

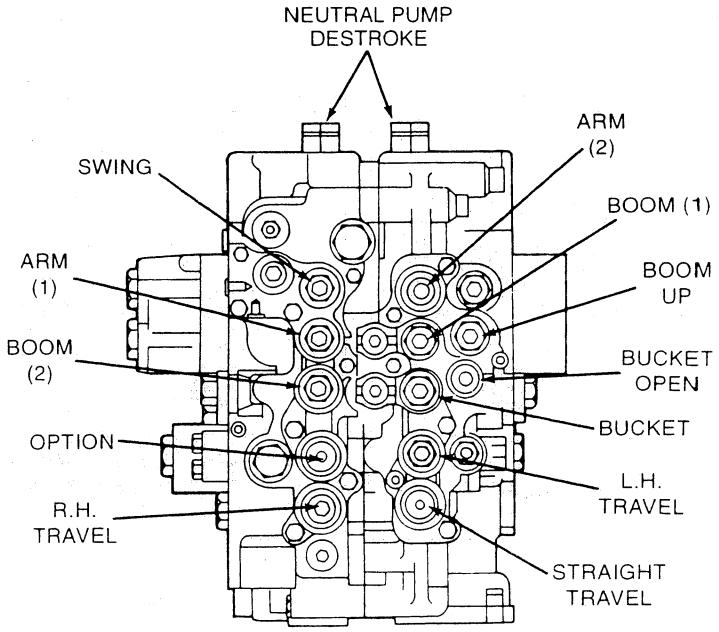
COMPONENT LOCATIONS



RIGHT SIDE

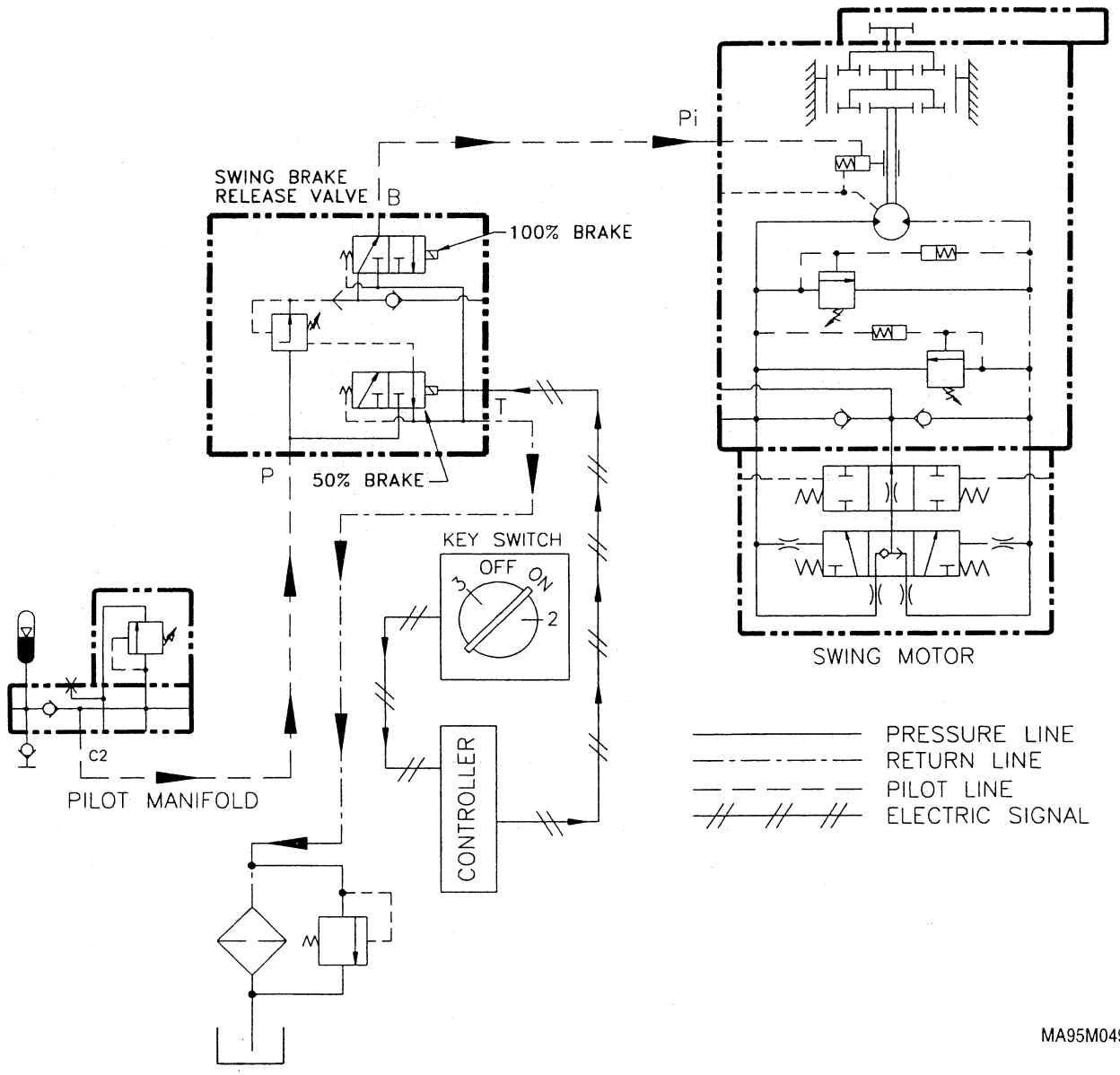


LEFT SIDE



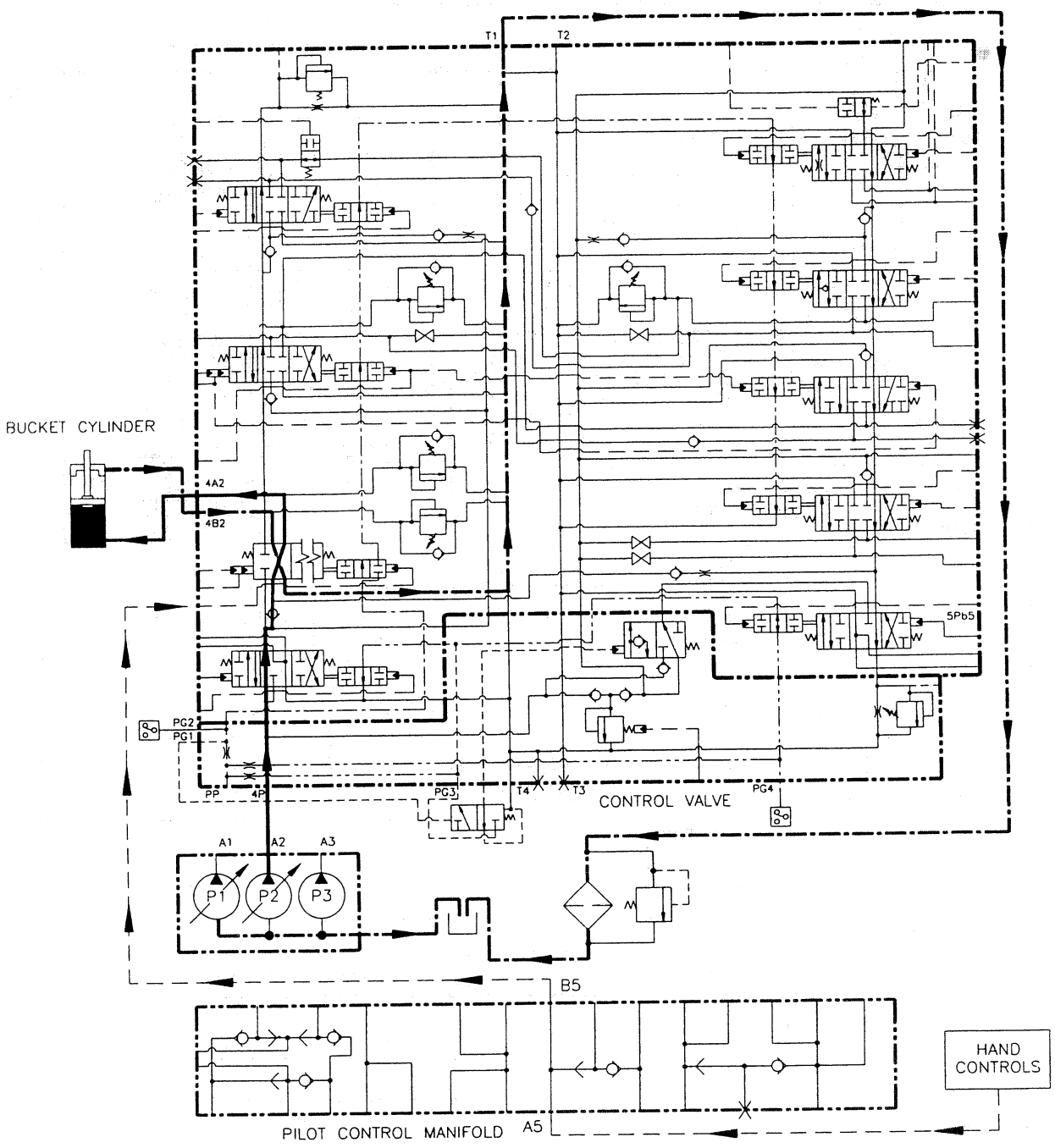
FRONT VIEW

OPERATION OTHER THAN SWING (50% Swing Brake)



When the swing hand control is in the neutral position the swing pressure switch connected to port C1 of the pilot control manifold sends an electrical signal to the controller. The controller sends an ON signal to the 50% brake solenoid valve. When the solenoid valve is shifted the pilot pressure to the spring end of the reducing valve is blocked. The pilot pressure that flows through the reducing valve acts against the spring pressure to modulate the valve. To lower the pilot pressure to 50% brake pressure, the reducing valve directs some pilot pressure through the 50% brake solenoid valve to the return line.

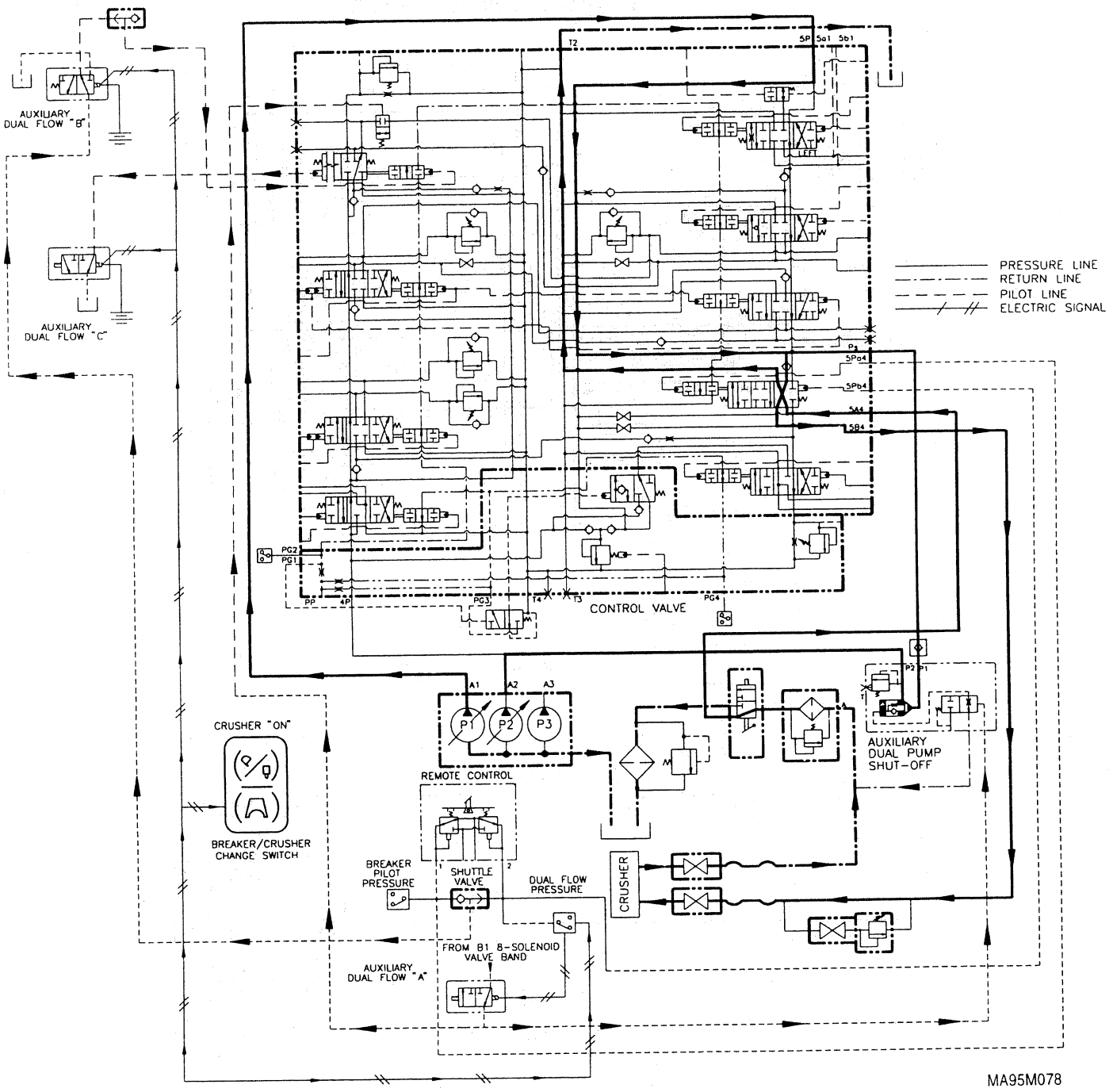
BUCKET CLOSING



MA95M065

Oil flow from P1 (pump) enters the 5P port of the control valve and oil flow from P2 (pump) enters the 4P port. When the hand control (bucket close) is operated, pilot.pressure is directed to the A5 port of the pilot control manifold and exits the B5 and S3 ports. The pilot pressure from the B5 port enters the 4Pa2 port of the control valve and shifts the bucket control valve spool. The oil flow from P2 is directed by the valve to the bucket cylinder and bucket closing movement is executed.

CRUSHER LINE

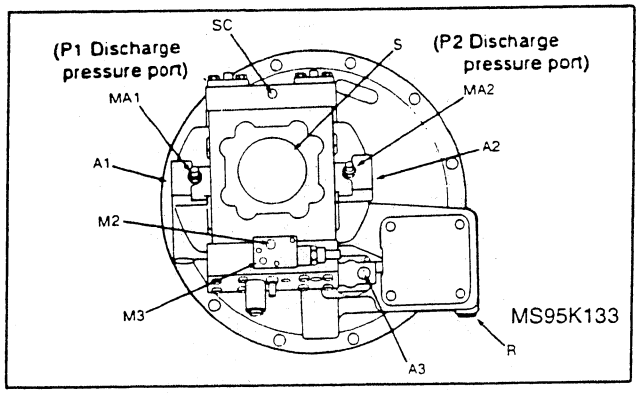


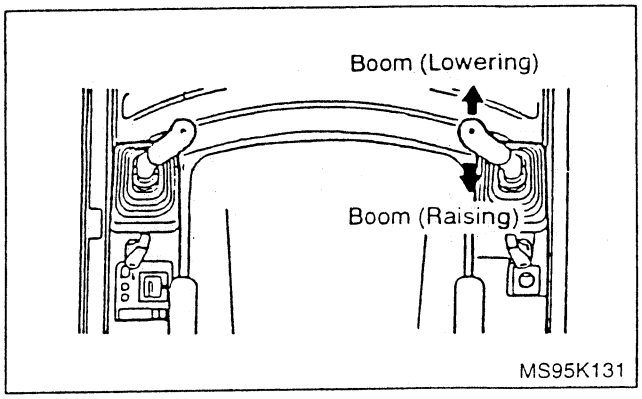
Switch the breaker/crusher switch to the Crusher side. The pilot pressure from the auxiliary remote control valve 1 port enters the control valve 5Pb4 port and switches the option spool. At the same time pilot pressure enters the pressure switch and to solenoid valve B. The pressure switch sends an electrical signal to solenoids A, B and C. When solenoid valve A is shifted pilot pressure from B port of the 8 solenoid valve bank is directed to the Pt port of the auxiliary dual pump shut-off valve and to P2 blocking valve. Solenoid C opens the arm (2) OUT pilot solenoid to reservoir. Solenoid valve B directs pilot pressure to the IN side of the arm (2) spool. When the P2 blocking valve and arm (2) IN are shifted the flow from P2 is blocked and force through the opened auxiliary dual pump shut-off valve to combine with P1 at the auxiliary valve.

During simultaneous arm and crusher operations the B and C solenoid valves are still activated and prevent the arm (2) spool from responding to the arm remote hand control, P2 oil continues to be directed to the auxiliary side and flow to the crusher is secured.

NOTE: *When the crusher is not used the dual flow solenoid valve A is not actuated.*

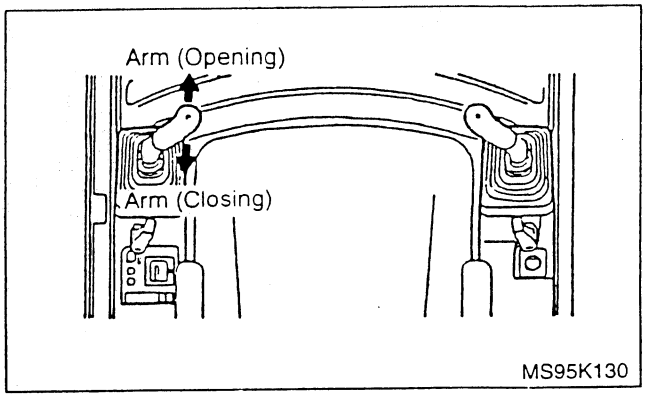
OTHER PORT RELIEF PRESSURE

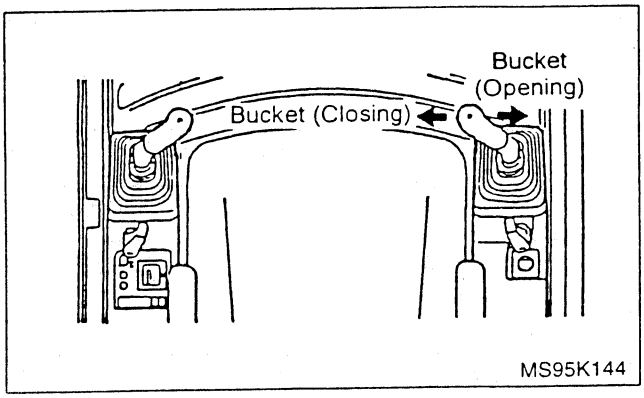




NOTE:
To verify the port relief pressure is equal to or greater than the setting of the power boost relief, engage the power boost button when the attachment is in the stalled position.

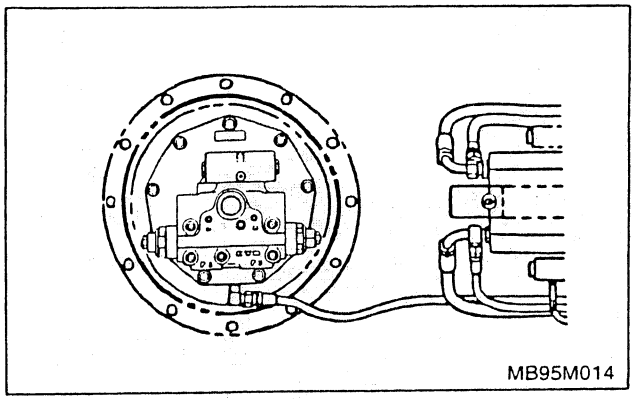
Measurement Item	Boom	Arm		Bucket	
	Rasing	Open	Close	Open	Close
Engine revolutions	Max.				
(Note) Lever operation	Relieve the actuator to be measured				
Measurement port	Ma2	Ma1		Ma2	
Pressure gauge	10 000 PSI	10 000 PSI		10 000 PSI	
Set pressure	5 260 PSI +70 -70 PSI			4 835 PSI +70 -70 PSI	
Boom Lowering	3 555 PSI +70 -70 PSI				





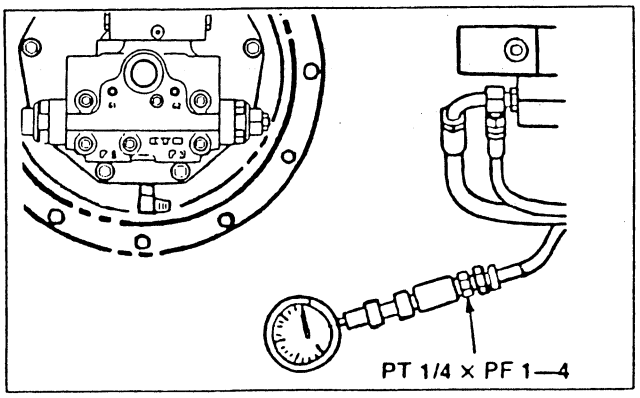
OTHER HYDRAULIC PRESSURE MEASUREMENTS

SWING PARKING BRAKE RELEASE PRESSURE


MB95M014

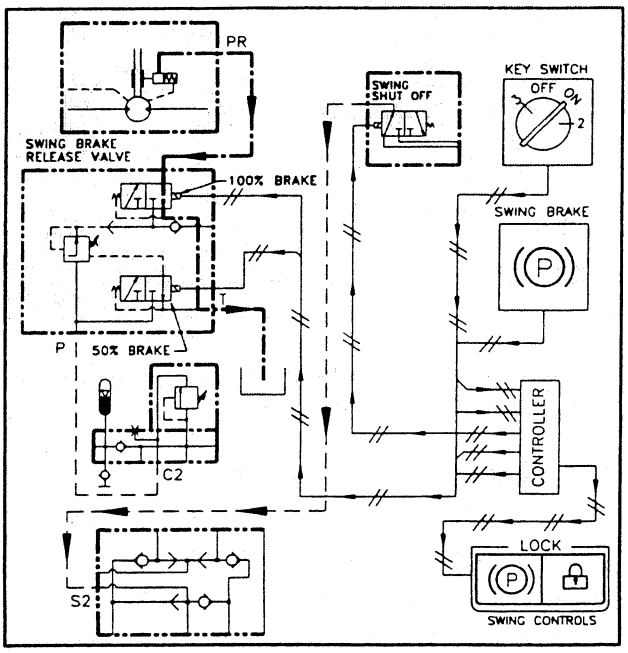
There are 3 kinds of signal pressure.

100% brake	when stopping and when swing lock switch is on
50% brake	at engine start only
0% brake	during swing operation



MB9FM013

1. Attaching the Pressure Gauge: Remove a swing brake pressure hose, and install the pressure gauge on the hose.



MB95M012

2. Measurement method is as follows:

a) 100% brake time

Lever operation	Lever neutral
Switch operation	Swing lock switch ON
Set pressure	0 to 40 PSI

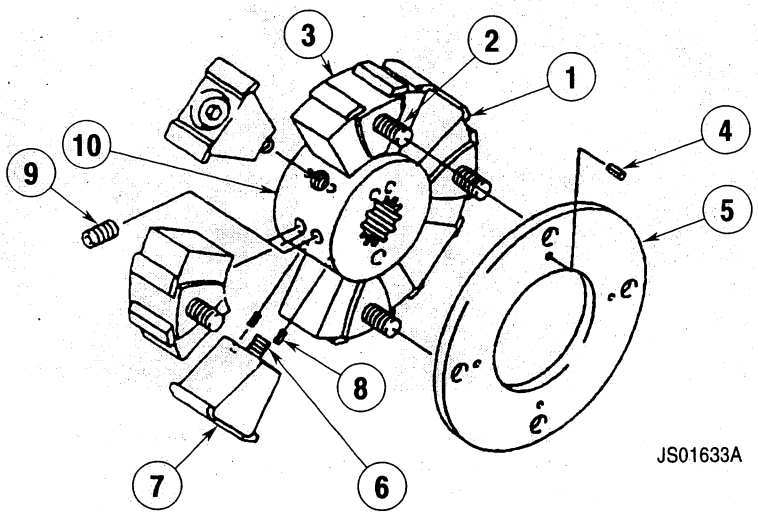
b) 50% brake time

Lever operation	Lever neutral
Switch operation	
Set pressure	185 to 265 PSI

c) 0% brake time

Lever operation	Lever neutral
Switch operation	
Set pressure	525 to 600 PSI

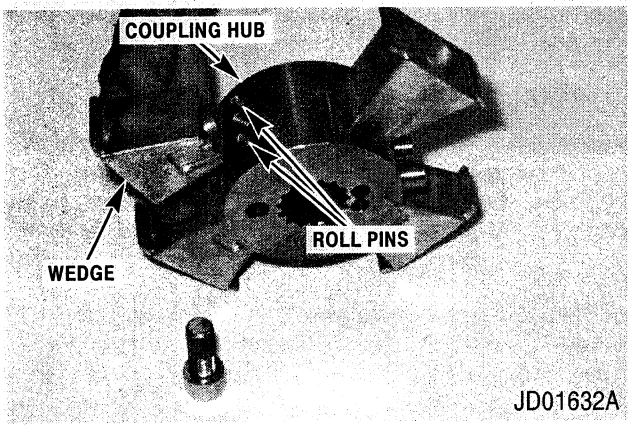
Installation



1. *Coupling*
2. *Socket Head Cap Screw*
3. *Wedge*
4. *Roll Pin*
5. *Plate*
6. *Socket Head Cap Screw*
7. *Wedge*
8. *Roll Pin*
9. *Set Screw*
10. *Coupling Hub*

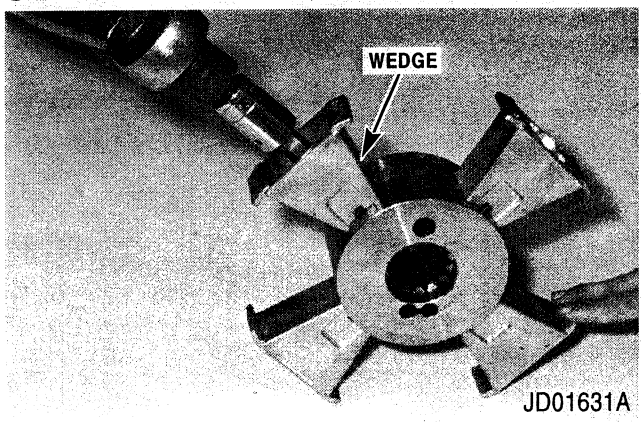
NOTE: *The numbers in parentheses in the following steps refer to the numbers shown in the illustration on page 7.*

STEP 1



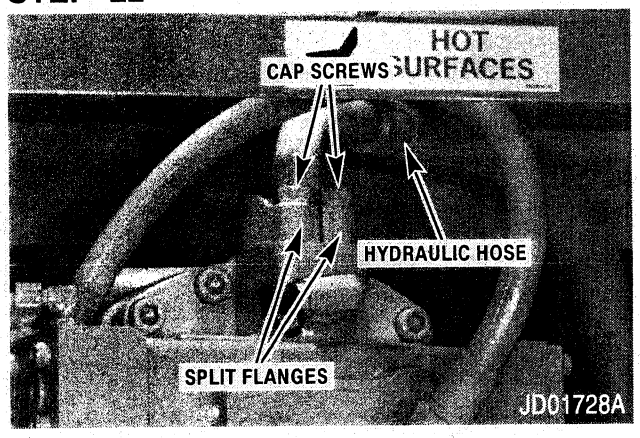
If necessary, install the eight roll pins (8). Install the four wedges (7) on the coupling hub (10).

STEP 2



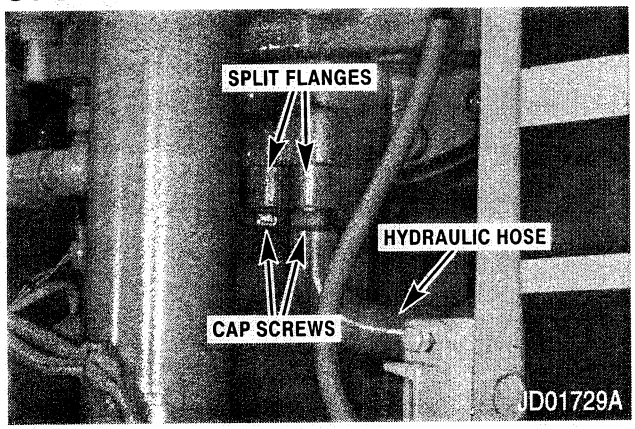
Install the four socket head cap screws (6) to secure the four wedges (7) to the coupling hub (10). Tighten the socket head cap screws to 325 to 354 lb-ft (441 to 480 Nm).

STEP 22



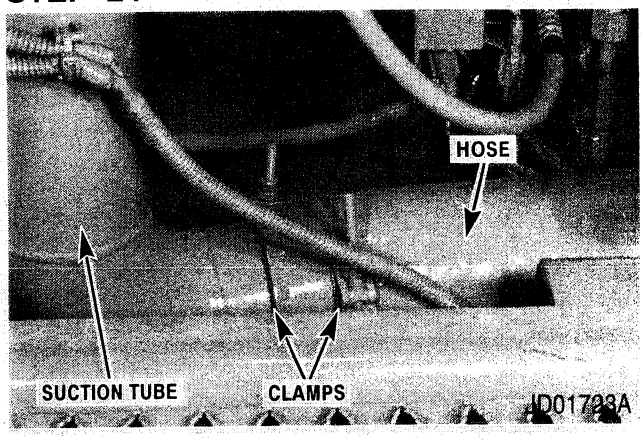
Remove the four cap screws and lock washers and remove the two split flanges. Identify, tag, and disconnect the hydraulic hose from the pump. Remove and discard the O-ring from the hydraulic hose. Plug the hydraulic hose and cap the hydraulic pump port to prevent intrusion of foreign material into the hydraulic pump and the hydraulic hose.

STEP 23



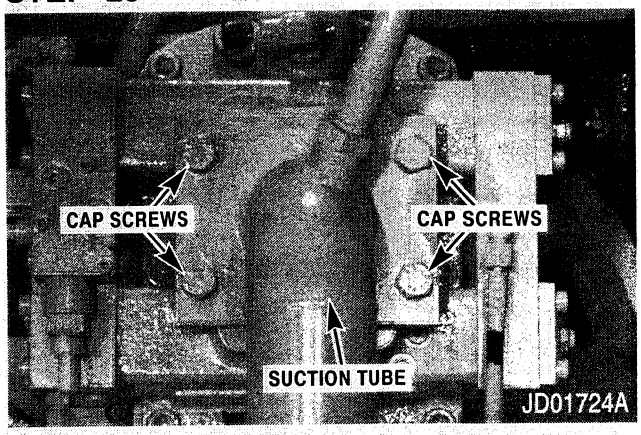
Remove the four cap screws and lock washers and remove the two split flanges. Identify, tag, and disconnect the hydraulic hose from the hydraulic pump. Remove and discard the O-ring from the hydraulic hose. Plug the hydraulic hose and the hydraulic pump port to prevent intrusion of foreign material.

STEP 24



Loosen the two clamps securing the hose to the suction tube.

STEP 25

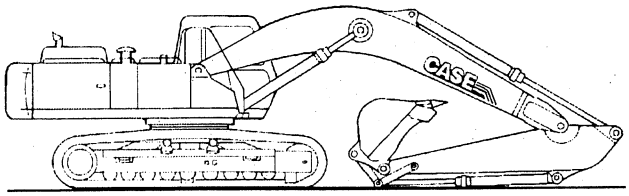


Remove the four cap screws and lock washers securing the flange of the suction tube to the hydraulic pump. Disconnect the suction tube from the hose and remove the suction tube from the machine.

MAIN HYDRAULIC CONTROL VALVE

Removal

STEP 1



JS01204A

Park the machine on a level surface. Lower the attachment to the ground.

STEP 2

Turn the key switch to the OFF position to stop the engine.

STEP 3

Turn the key switch to the ON position. Make sure the left control console is down in the OPERATING position and the gate lock control lever is pushed down to the OPERATING position. Check that the CONTROLS LOCK symbol is not displayed on the systems display panel. If the CONTROLS LOCK symbol is displayed, push and release the CONTROLS OFF button on the left control panel.

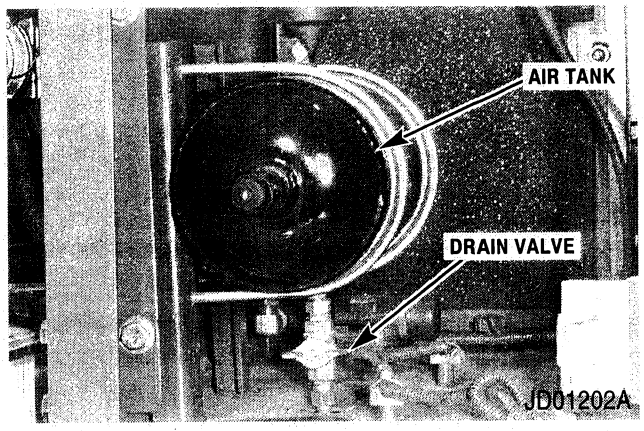
STEP 4

Operate the swing and attachments control levers back and forth, left and right, ten times to release hydraulic system pressure.

STEP 5

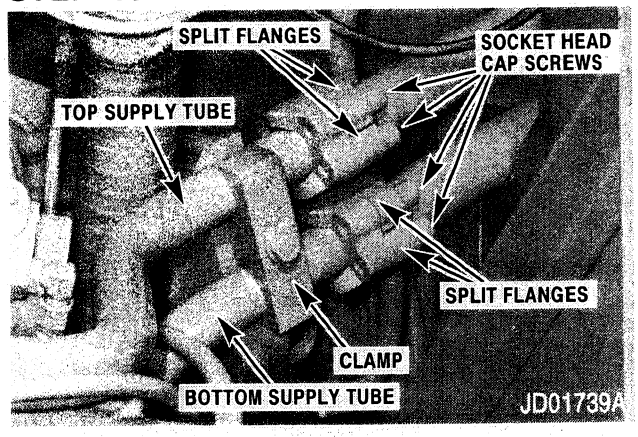
Turn the key switch to the OFF position.

STEP 6



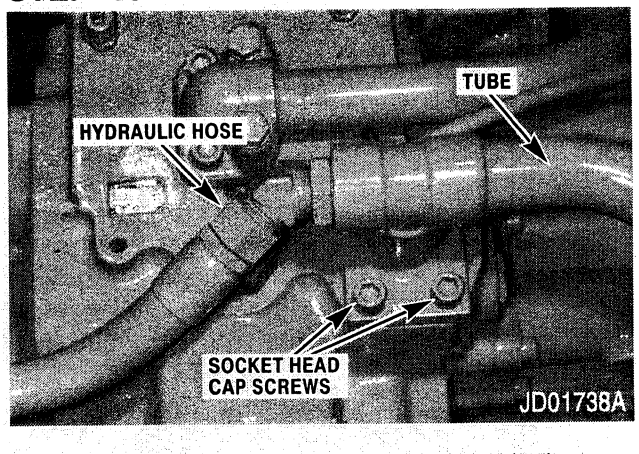
Open the left side access doors. Open the air tank drain valve to release air pressure.

STEP 15



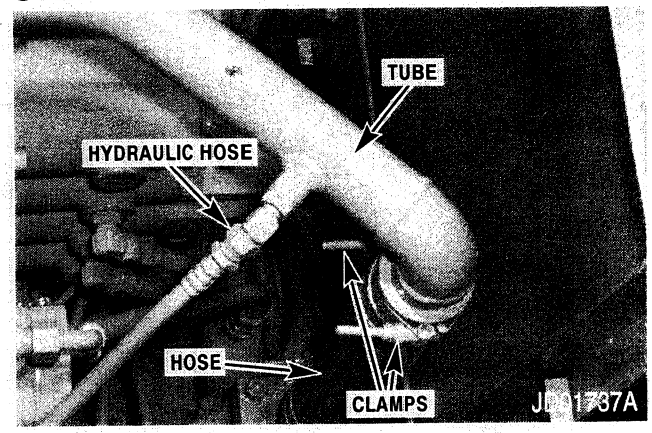
Connect the control valve top and bottom supply tubes to the hydraulic pump hoses. Be sure that new O-rings are installed between the tube and hose connections. Install the four split flanges and eight lock washers and socket head cap screws.

STEP 16



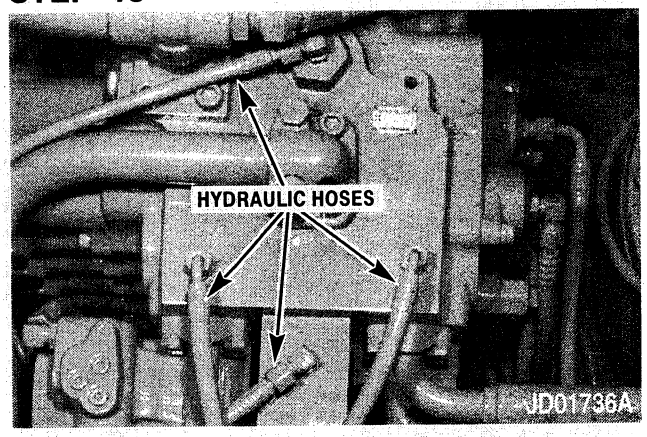
Install a new O-ring in the tube. Connect the tube between the control valve and the hose. Install the four lock washers and socket head cap screws. Connect the hydraulic hose to the elbow installed in the tube following the identification tag installed during removal. Remove and discard the identification tag.

STEP 17



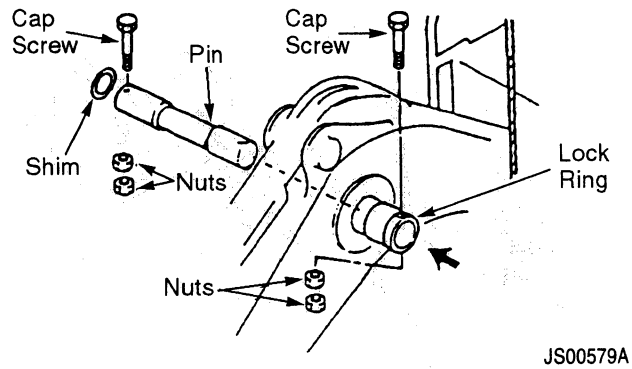
Tighten the two hose clamps to secure the hose and tube. Connect the hydraulic hose to the elbow installed in the tube following the identification tag installed during removal. Remove and discard the identification tag.

STEP 18



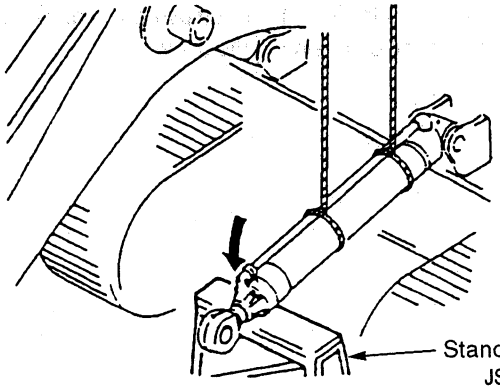
Connect the four hydraulic hoses following the identification tags installed during removal. Remove and discard the identification tags.

STEP 12



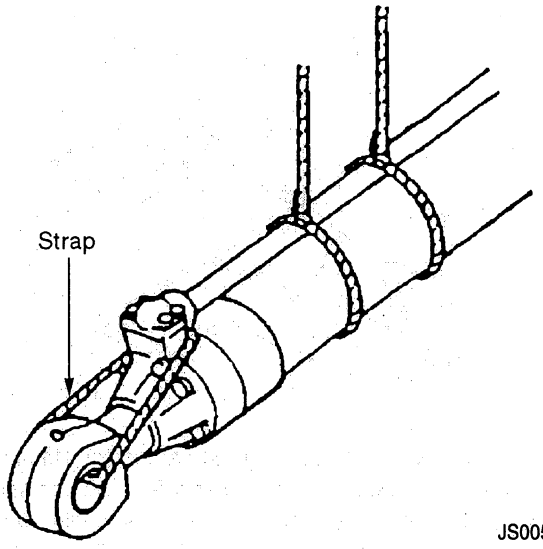
Remove the four nuts securing the two cap screws. Remove the cap screws from the pin and lock rings. Drive the pin through far enough to clear the boom cylinder to be removed. Remove the shims and lock rings. Check the OD of the pin. Replace the pin if the OD is less than 4.291 inches (109 mm).

STEP 13



Place a stand in front of the boom cylinder. Lower the front end of the boom cylinder until it rests on the stand.

STEP 14

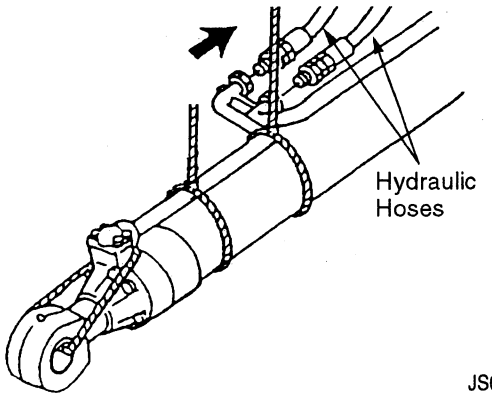


Attach a suitable strap to the boom cylinder to hold the cylinder rod to the cylinder barrel.

STEP 15

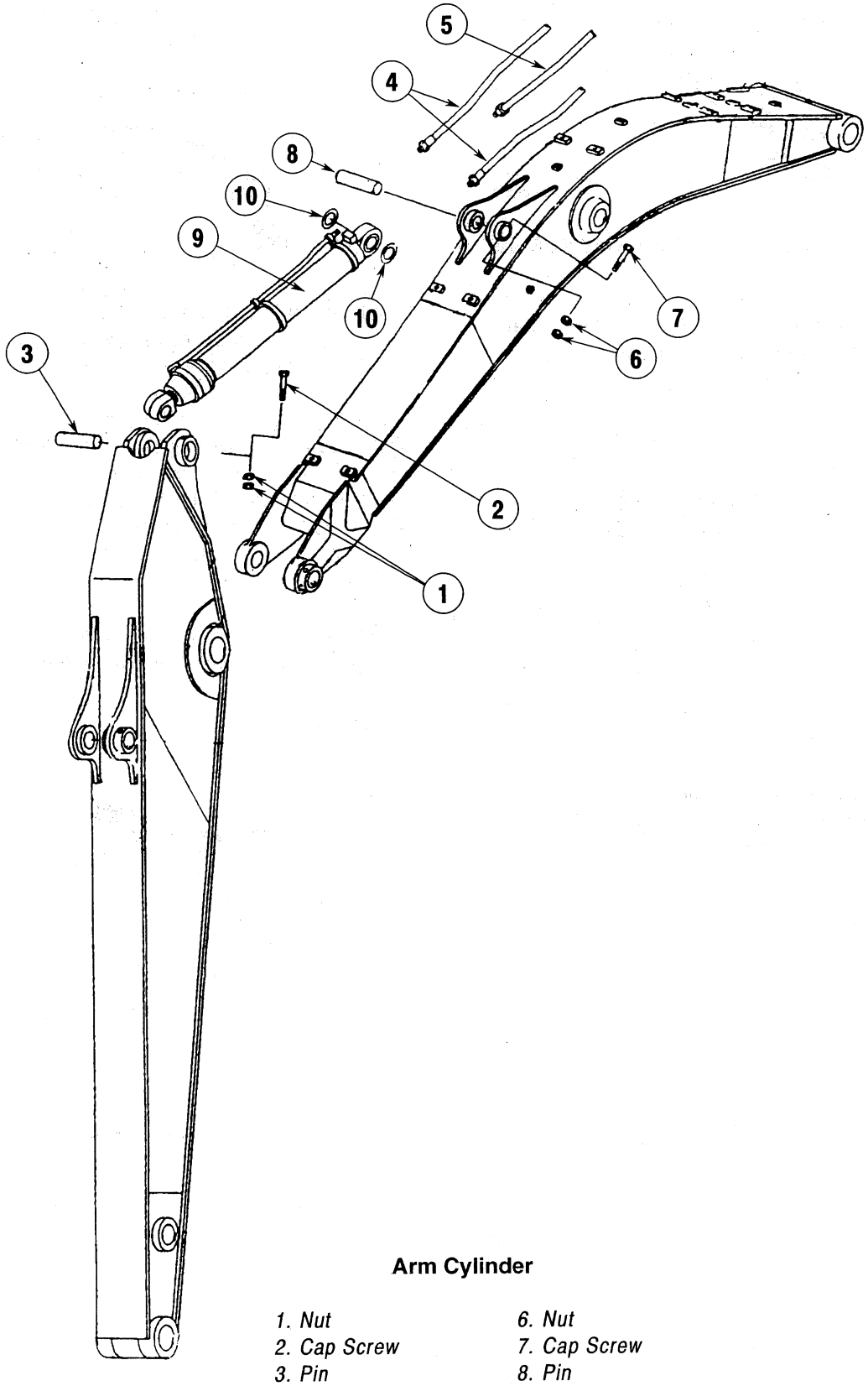
Start the vacuum pump.

STEP 16



Disconnect the hydraulic hoses from the fittings on the boom cylinder. Install plugs and caps on the hydraulic hoses and fittings. Shut off the vacuum pump.

Installation

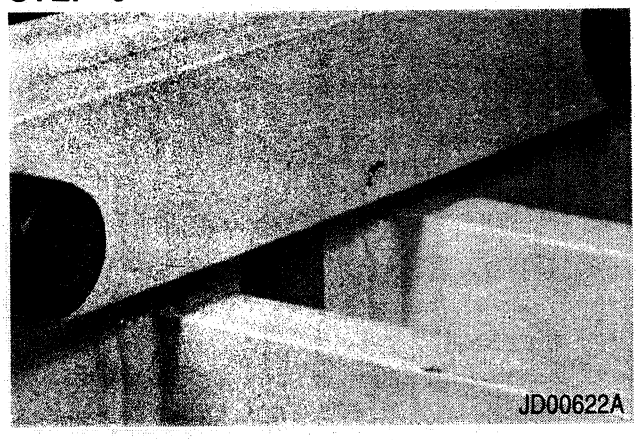


JS00603A

Arm Cylinder

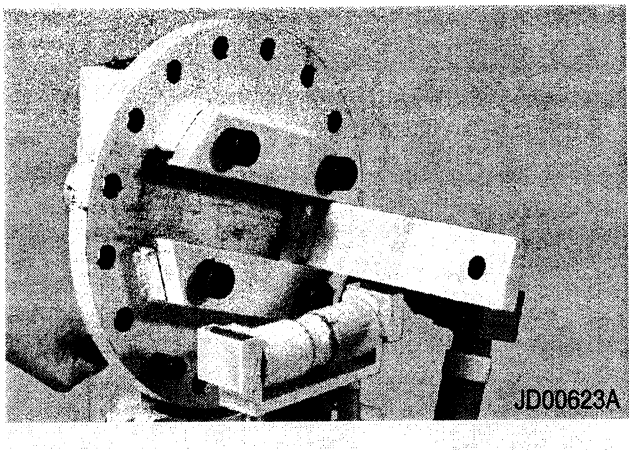
1. *Nut*
2. *Cap Screw*
3. *Pin*
4. *Hydraulic Hose*
5. *Lubrication Hose*
6. *Nut*
7. *Cap Screw*
8. *Pin*
9. *Arm Cylinder*
10. *Shim*

STEP 6



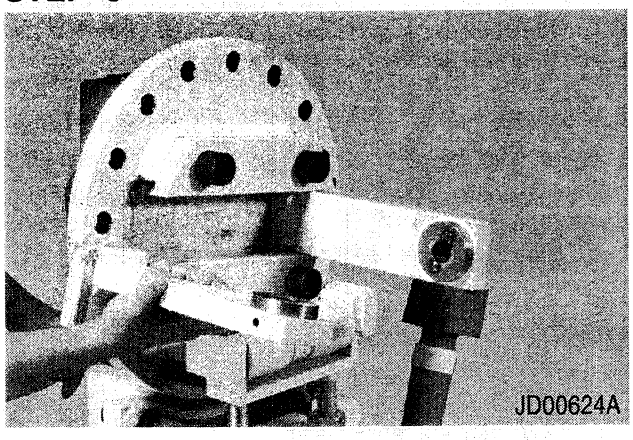
Slide the chuck wings in the tail stock chuck. Use the scale on the face of the chuck to aid in centering the chuck wings.

STEP 7



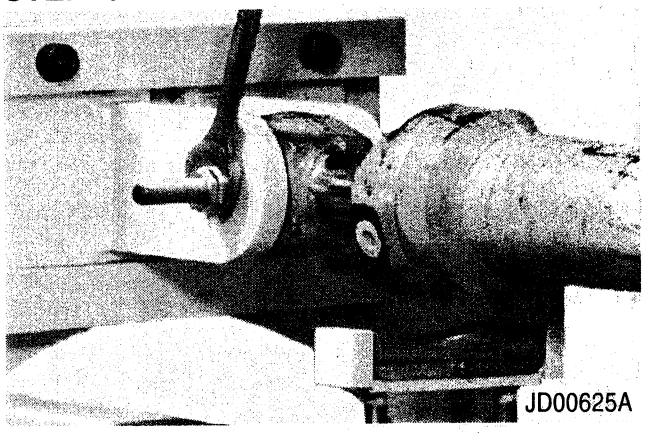
Install the stop pins in the head stock chuck to prevent the chuck from turning.

STEP 8



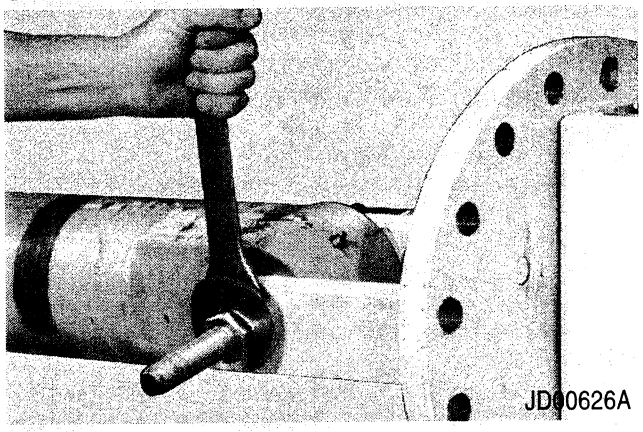
Install the bushings in the head stock chuck wings. Tighten the setscrews to secure the bushings. Install the chuck wings in the head stock chuck. Tighten the socket head cap screws to secure the chuck wings. Use the scale on the face of the chuck to aid in centering the chuck wings.

STEP 9



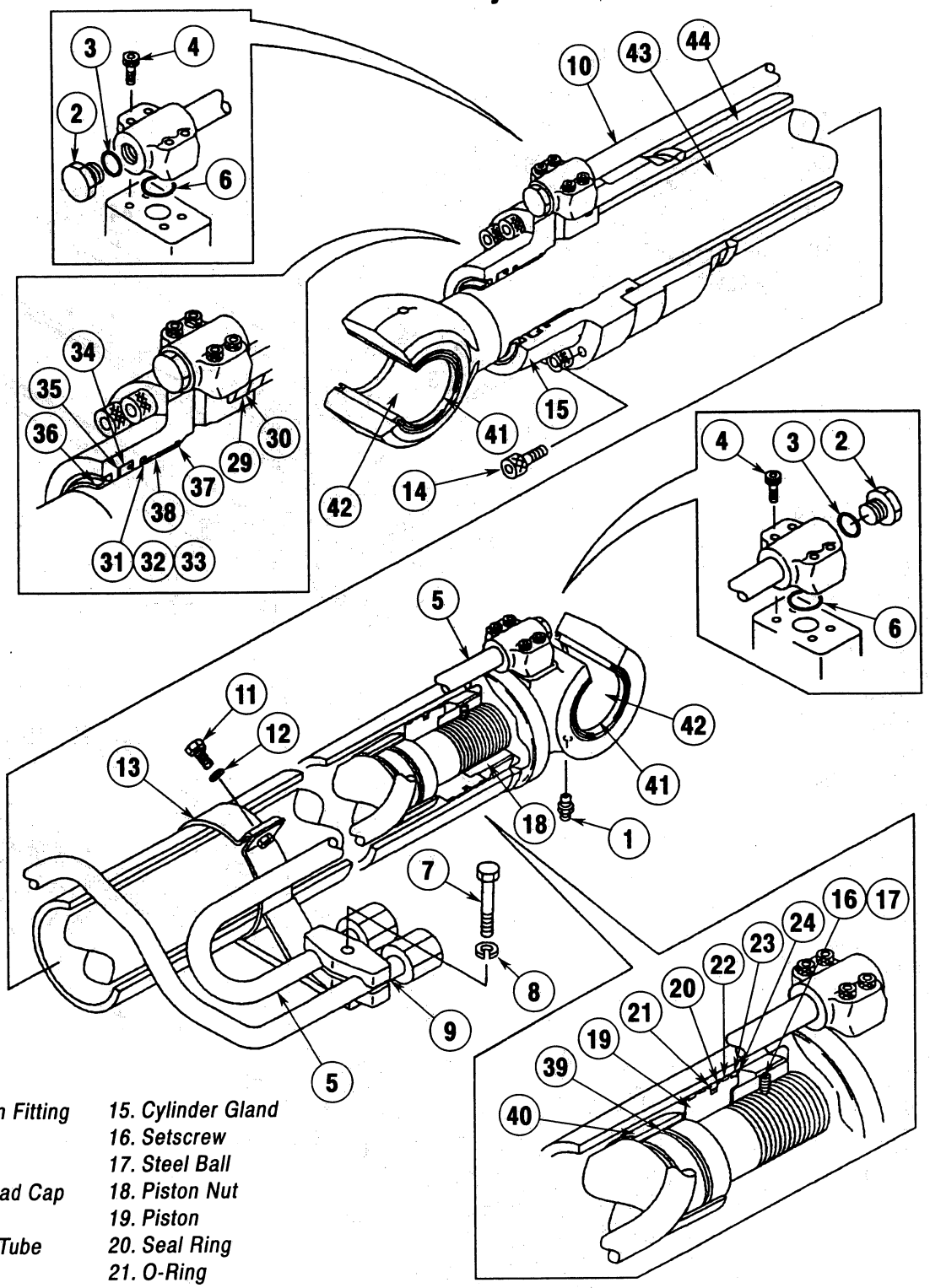
Connect lifting equipment, if necessary, to the cylinder. Position the cylinder in the stand with the rod end of the cylinder at the tail stock chuck. Loosen the socket head cap screws securing the tail stock chuck wings. If necessary, remove one tail stock chuck wing. When positioning the cylinder rod end on the tail stock chuck wing, be sure that the bushing is centered in the rod bushing. Install the other tail stock chuck wing ensuring that the wing bushing is centered in the cylinder rod bushing. Install through cap screw and nuts to secure the cylinder rod end to the stand.

STEP 10



At the head stock chuck end of the stand, loosen the socket head cap screws securing the head stock chuck wings. If necessary, remove one head stock chuck wing. When positioning the cylinder barrel end on the head stock chuck wing, be sure that the bushing is centered in the cylinder barrel bushing. Install the other head stock chuck wing ensuring that the wing bushing is centered in the cylinder barrel bushing. Install through cap screw and nuts to secure the cylinder barrel end to the stand.

Assembly



JS00664A

Boom Cylinder

1. *Lubrication Fitting*
2. *Plug*
3. *O-Ring*
4. *Socket Head Cap Screw*
5. *Hydraulic Tube*
6. *O-Ring*
7. *Cap Screw*
8. *Lock Washer*
9. *Tube Clamp*
10. *Hydraulic Tube*
11. *Cap Screw*
12. *Lock Washer*
13. *Clamp*
14. *Socket Head Cap Screw*
15. *Cylinder Gland*
16. *Setscrew*
17. *Steel Ball*
18. *Piston Nut*
19. *Piston*
20. *Seal Ring*
21. *O-Ring*
22. *Wear Ring*
23. *Wear Ring*
24. *Washer*
25. *Not Used on This Illustration*
26. *Not Used on This Illustration*
27. *Not Used on This Illustration*
28. *Not Used on This Illustration*
29. *Seal*
30. *Back Up Ring*
31. *Wear Ring*
32. *Back Up Ring*
33. *Seal*
34. *Buffer Ring*
35. *Wiper Ring*
36. *Wiper*
37. *Retaining Ring*
38. *Bushing*
39. *Seal*
40. *Cushion Ring*
41. *Wiper*
42. *Bushing*
43. *Cylinder Rod*
44. *Cylinder Tube*

STEP 23

Bucket Cylinder

NOTE: ***The numbers in parentheses in the following steps refer to the Bucket Cylinder illustration on page 39.***

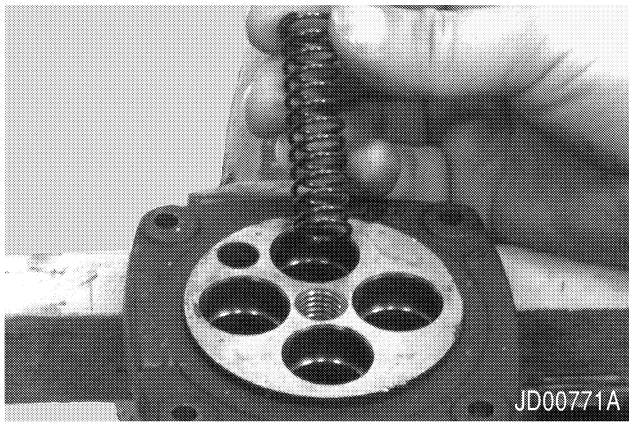
1. Install the clamp (13) on the cylinder tube. Secure the clamp with two washers (12) and cap screws (11). Tighten the cap screws to 25 lb-ft (32 Nm).

2. Install the clamp (9) and tube (5) on the clamp (13). Secure the clamp (9) with lock washer (8) and cap screw (7). Tighten the cap screw to 31 lb-ft (40 Nm).

3. Install two new O-rings (6) on the pads on the tube. Connect the hydraulic tube (5) to the cylinder, and secure the tube with eight socket head cap screws (4). Tighten the cap screws to 40 lb-ft (51 Nm).

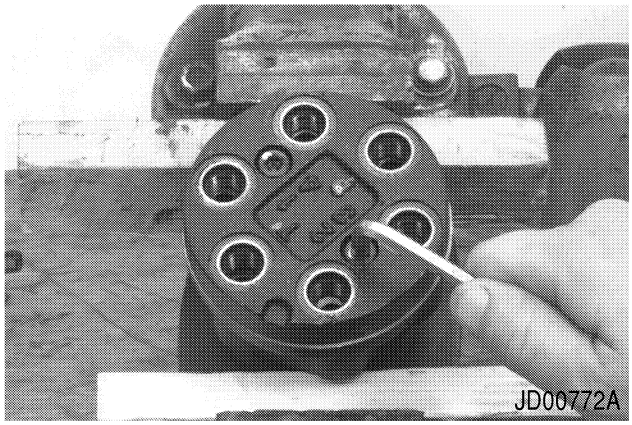
4. Install two lubrication fittings (1) on the cylinder.

STEP 8



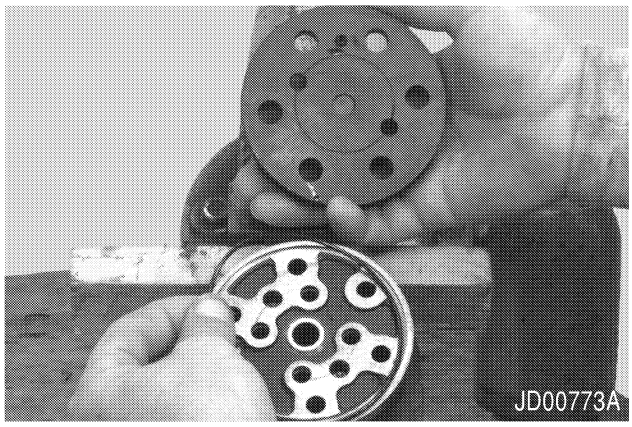
Remove the return spring from the housing.

STEP 9



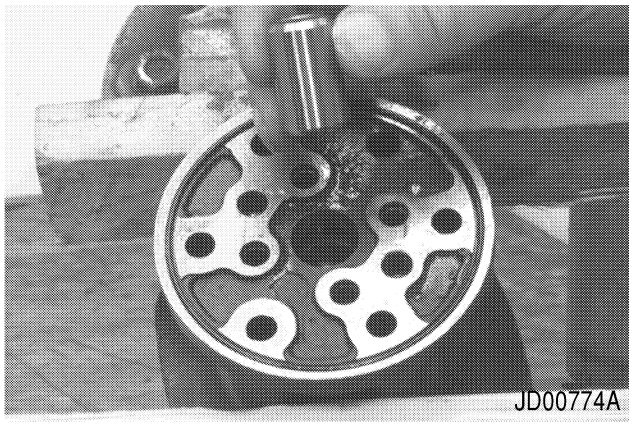
Reposition the valve in the vise and loosen and remove the socket head cap screws and seal washers.

STEP 10



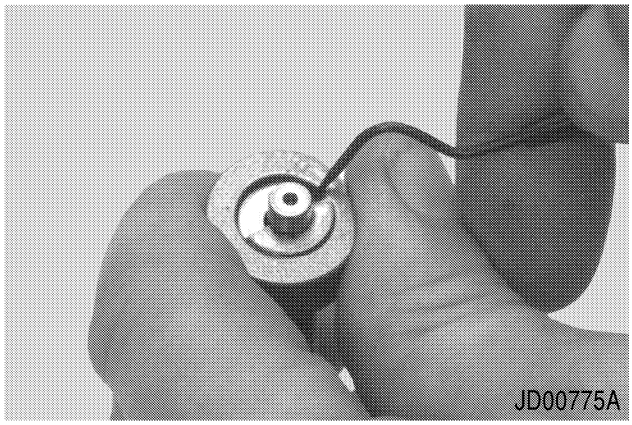
Remove the port plate and O-ring from the housing. Discard O-ring.

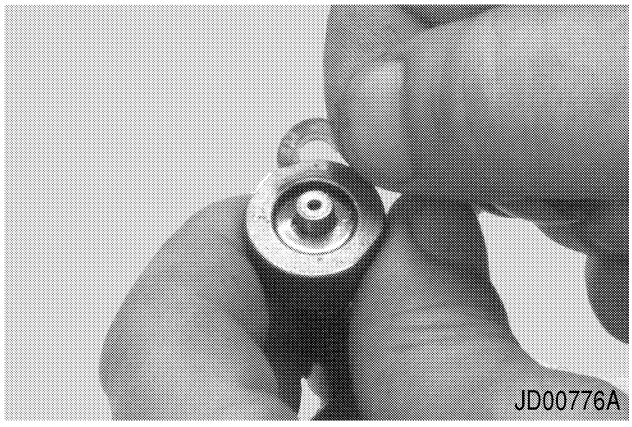
STEP 11



Remove the bushing from the housing.

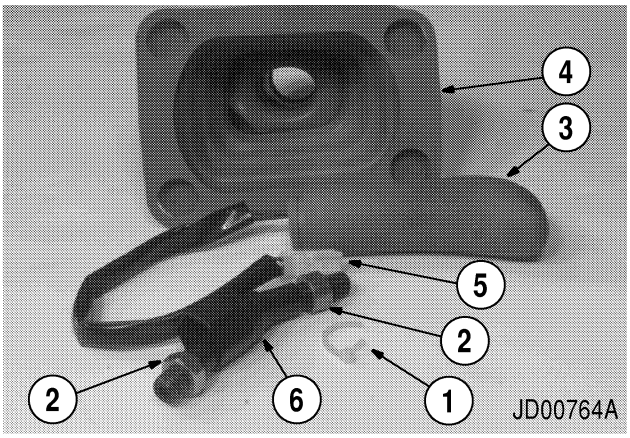
STEP 12





Disassemble the pressure reduction assembly by standing the spool on the work bench. Push the spring seat down (not more than 0.24 inch (6 mm)) and remove the two half washers. Take care not to scratch the surface of the spool.

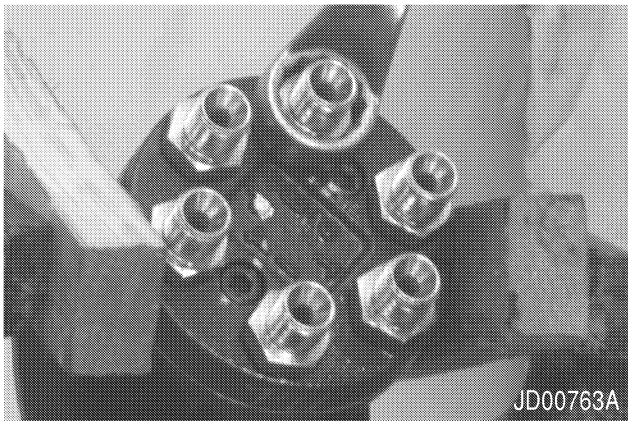
STEP 1



1. Tie Strap
2. Nut
3. Handle
4. Boot
5. Connector
6. Lever

Put the boot (4) on the lever (6) then install the nuts (2). Screw the handle (3) with the connector (5) onto the lever (6). Tighten the nut (2) against the handle (4). Install a new tie strap (1) to hold the wires to the lever.

STEP 2



Put the control valve in a vise. Put new O-rings on the adapters. Remove the plugs from the control valve ports. Install the six adapters and new O-rings in the control valve. Tighten the adapters securely. Cap the control valve ports to prevent contaminants from entering the control valve.

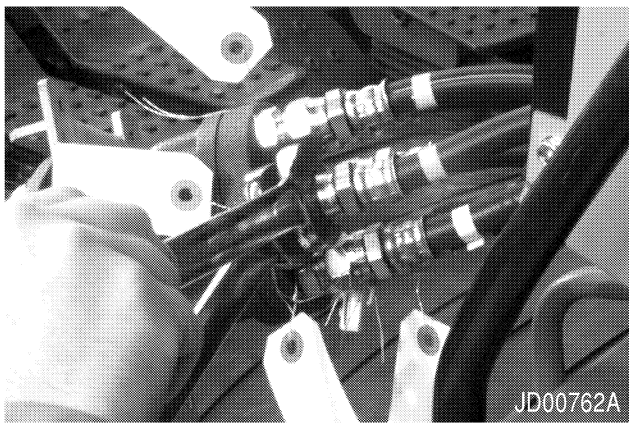
STEP 3

To prevent loss of hydraulic oil when disconnecting or connecting the hydraulic lines, connect a vacuum pump to the hydraulic reservoir if not already connected. (See Section 8000.)

STEP 4

Start the vacuum pump.

STEP 5

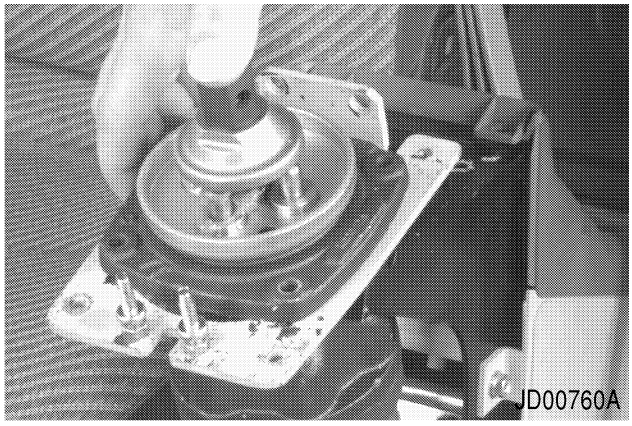


Position the control valve in the machine and install the bracket on the control valve. Remove the caps from the control valve ports. Remove the plugs from the hydraulic hose ends and connect the hydraulic hoses to the control valve following the tags installed during removal. Tighten the hydraulic hose connections securely.

STEP 6

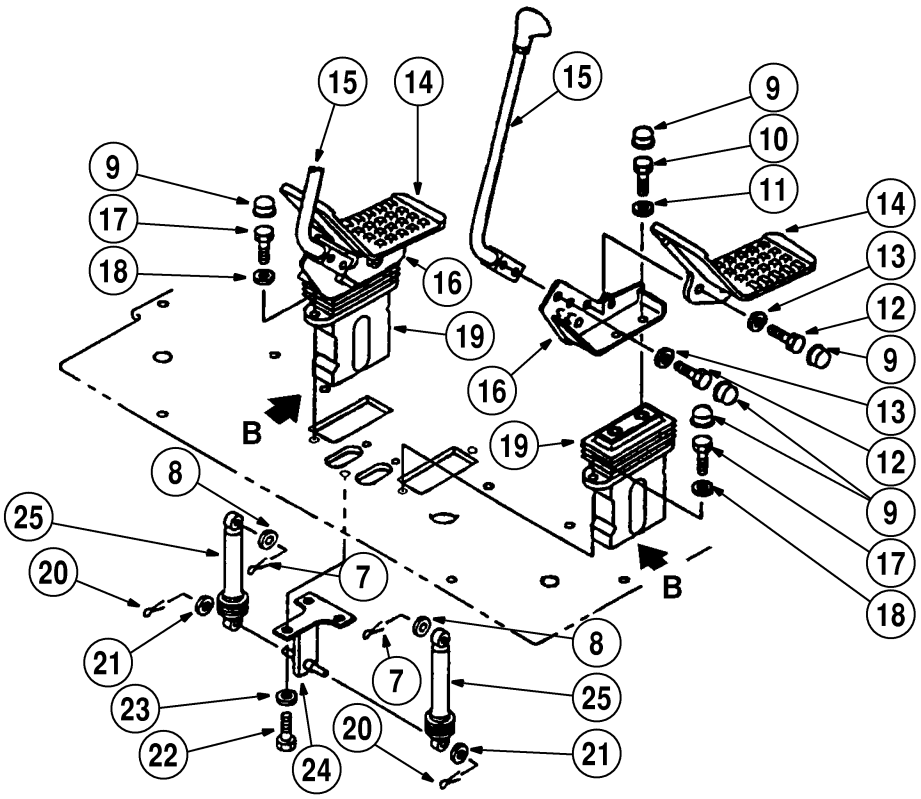
Turn off the vacuum pump.

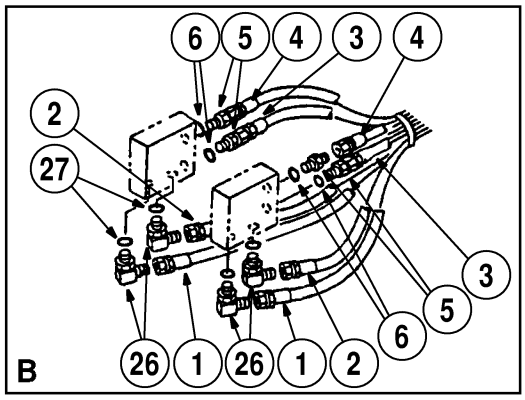
STEP 7



Position the control valve and bracket on the frame and slide them rearward.

Installation



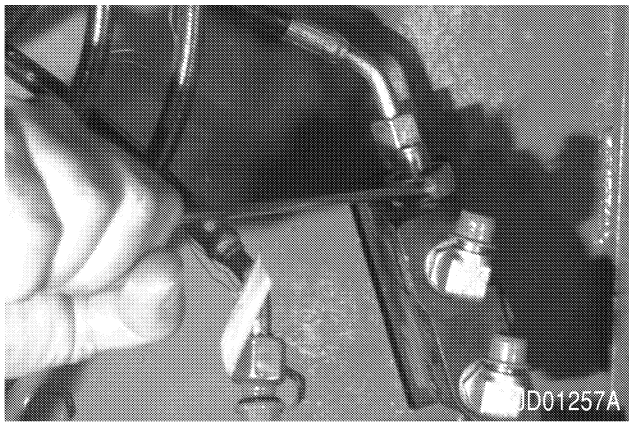


JS00808A

Foot Left and Right Travel Control Valves

1. Hydraulic Hose
2. Hydraulic Hose
3. Hydraulic Hose
4. Hydraulic Hose
5. Adapter
6. O-Ring
7. Clip Pin
8. Flat Washer
9. Cap
10. Cap Screw
11. Flat Washer
12. Cap Screw
13. Flat Washer
14. Pedal
15. Lever
16. Bracket
17. Cap Screw
18. Flat Washer
19. Travel Control Valve
20. Clip Pin
21. Flat Washer
22. Cap Screw
23. Flat Washer
24. Bracket
25. Damper
26. Right Angle Adapter
27. O-Ring

STEP 5

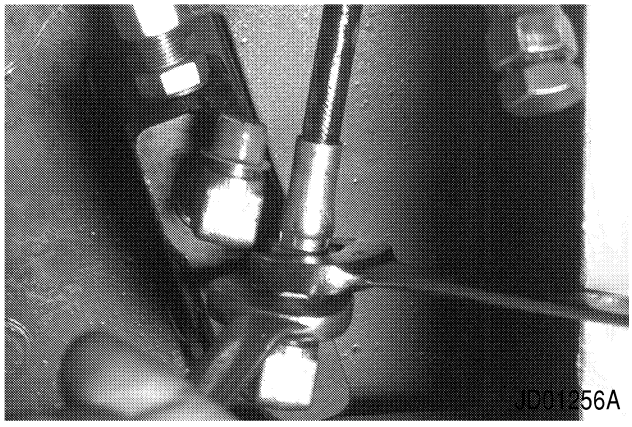


Install the two flat washers and cap screws to hold the bracket to the control valve. Install the caps on the cap screws.

STEP 6

To prevent loss of hydraulic oil when disconnecting or connecting the hydraulic lines, connect a vacuum pump to the hydraulic reservoir if not already connected. (See Section 8000.) Turn on the vacuum pump.

STEP 7

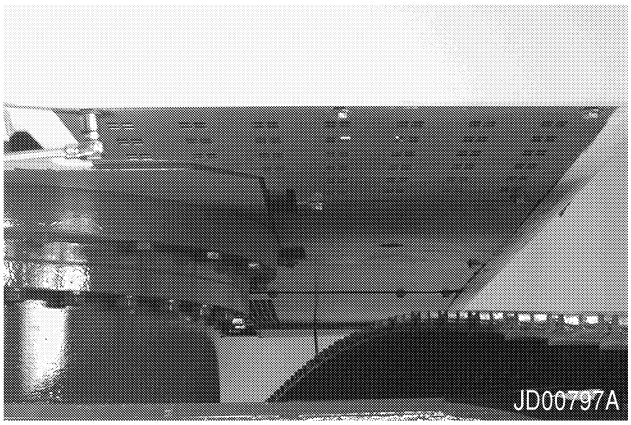


Remove the plugs from the ends of the hydraulic hoses. Remove the caps from the ports of the control valve. Connect the hydraulic hoses to the control valve following the tags installed during removal. Tighten the hydraulic connections securely. Remove the identification tags.

STEP 8

Turn off the vacuum pump.

STEP 9



Slide the slotted holes in the front of the bottom front access panel between the three cap screws. Hold the opposite end of the access panel and remove the cap screws and flat washers holding the middle access panel to the machine. Align the holes in the front and middle access panels and install the flat washers and cap screws to hold both panels. Tighten the three front cap screws.

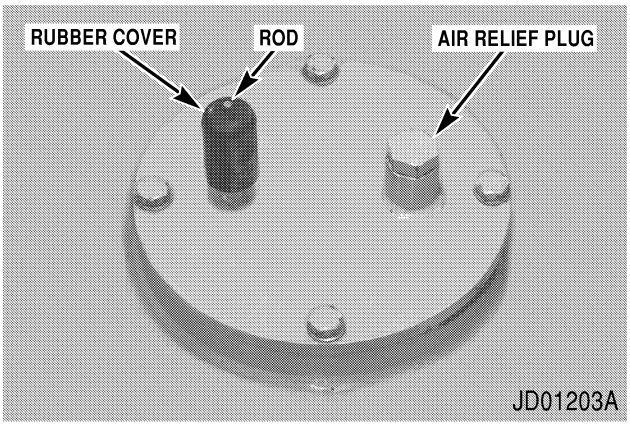
STEP 10

Remove the DO NOT OPERATE tag from the ignition key.

STEP 11

Disconnect the vacuum pump from the hydraulic reservoir. Check the hydraulic reservoir oil level and add hydraulic oil if necessary.

STEP 7



At the top of the hydraulic reservoir, loosen the air relief plug to release air pressure in the hydraulic reservoir. When air pressure release starts, stop loosening the air relief plug. Air pressure can also be released by lifting the rubber cover from the breather, raising the rod in the breather and releasing the air pressure. When all air pressure is released, tighten the air relief plug and close the air tank drain valve.

WARNING: *Before doing any maintenance on the hydraulic system, make sure that all hydraulic pressure has been released by operating the control levers several times and the hydraulic reservoir air pressure has been released. Failure to do so could cause serious injury.* CSM120

WARNING: *Pressurized hydraulic system; before you replace the hydraulic filters or service the hydraulic system, release the hydraulic reservoir air pressure. If you do not follow these instructions, you can be injured.* SA047

STEP 8

Install a DO NOT OPERATE tag on the ignition key and put the key in the key switch.

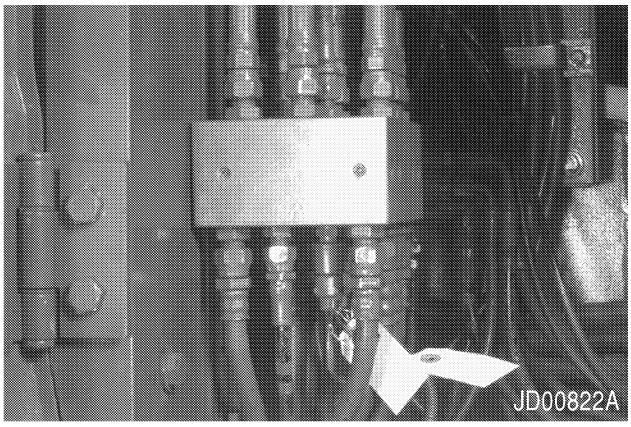
STEP 9

To prevent loss of hydraulic oil when disconnecting the hydraulic lines, connect a vacuum pump to the hydraulic reservoir. (See Section 8000.)

STEP 10

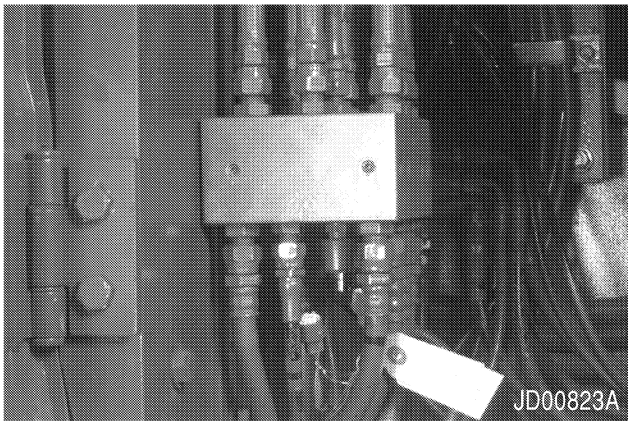
Open the left side access doors.

STEP 11



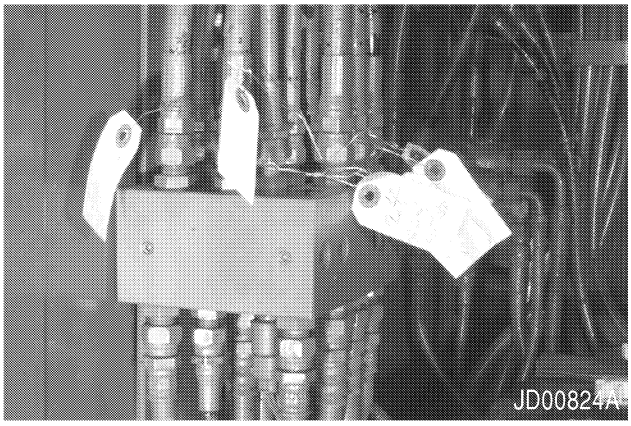
To aid installation, put identification tags on the electrical wires connected to the shuttle valve.

STEP 12



Disconnect the three connectors by depressing connector tab and pulling connector down from pressure switch.

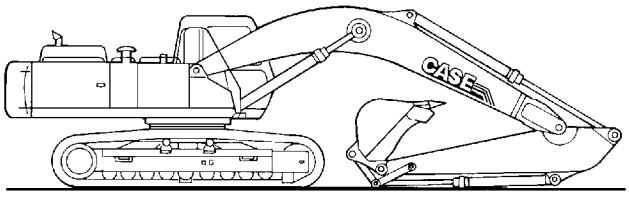
STEP 13



To aid installation, put identification tags on hydraulic hoses.

Removal

STEP 1



JS01204A

Park the machine on firm level ground.

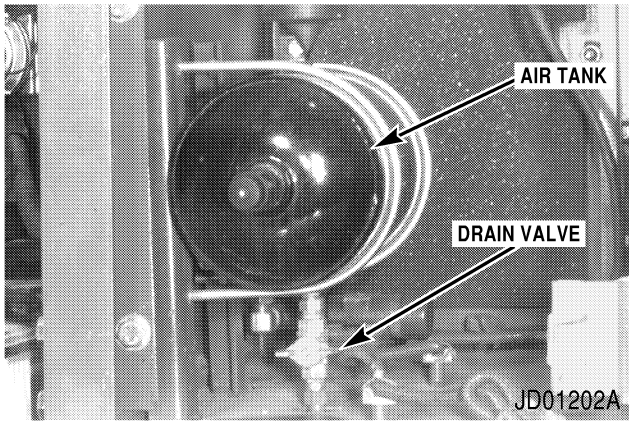
STEP 2

Turn the key switch to the ON position. Make sure the left control console is down in the OPERATING position and the gate lock control lever is pushed down to the OPERATING position. Check that the CONTROLS LOCK symbol is not displayed on the systems display panel. If the CONTROLS LOCK symbol is displayed, push and release the CONTROLS OFF button on the left control panel.

STEP 3

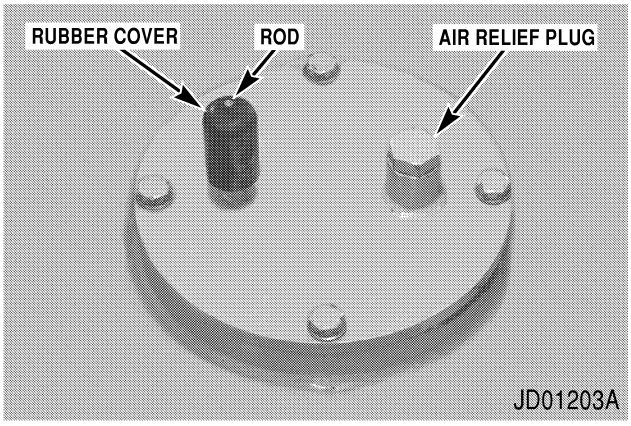
Operate the swing and attachments control levers back and forth, left and right ten times, to release hydraulic system pressure. Turn the key switch to the OFF position.

STEP 4



Open the left side access doors. Open the air tank drain valve to release air pressure

STEP 5



At the top of the hydraulic reservoir, loosen the air relief plug to release air pressure in the hydraulic reservoir. When air pressure release starts, stop loosening the air relief plug. Air pressure can also be released by lifting the rubber cover from the breather, raising the rod in the breather and releasing the air pressure. When all air pressure is released, tighten the air relief plug and close the air tank drain valve.

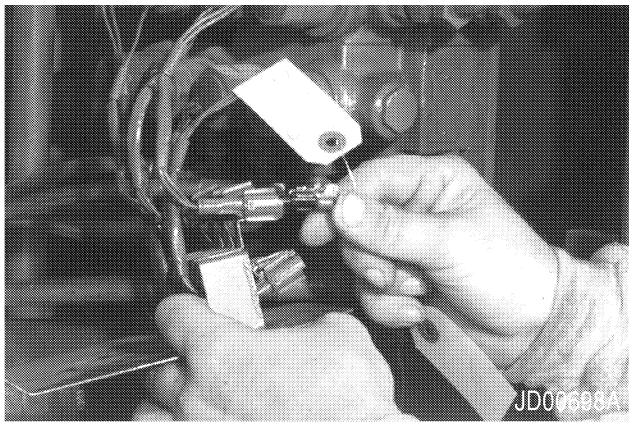
WARNING: *Before doing any maintenance on the hydraulic system, make sure that all hydraulic pressure has been released by operating the control levers several times and the hydraulic reservoir air pressure has been released. Failure to do so could cause serious injury.* CSM120

WARNING: *Pressurized hydraulic system; before you replace the hydraulic filters or service the hydraulic system, release the hydraulic reservoir air pressure. If you do not follow these instructions, you can be injured.* SA047

STEP 6

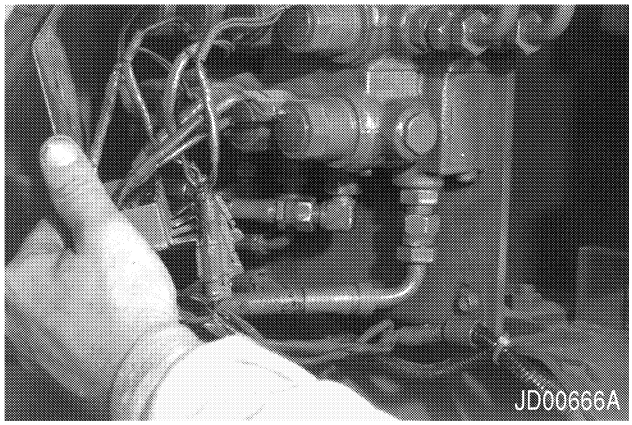
Open the right side access door.

STEP 7



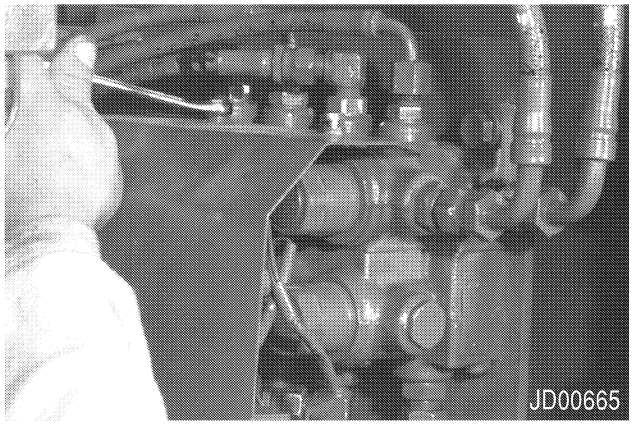
Connect the connectors to the solenoid connectors following tags applied during removal.

STEP 8



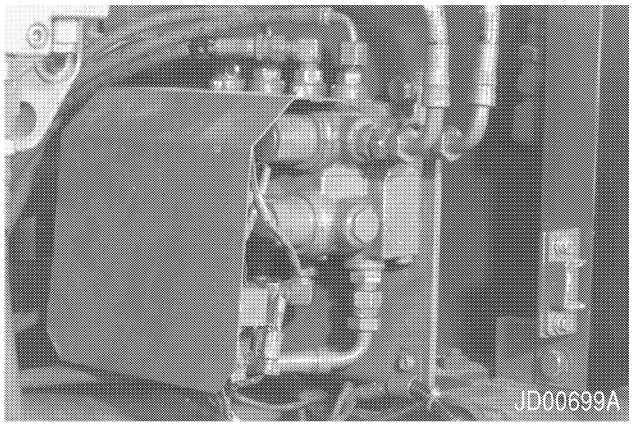
Position the bracket with connectors installed on the solenoid valve.

STEP 9



Install the bracket to the solenoid valve using two flat washers, lock washers, and cap screws.

STEP 10



Remove all tags from the hydraulic hoses and wiring.

STEP 11

Close the right side access door.

STEP 12

Disconnect the vacuum pump from the hydraulic reservoir.

STEP 13

Remove the DO NOT OPERATE tag from the ignition key.

Inspection

STEP 1

Clean all parts except solenoids using suitable cleaning solvent. Wipe exterior of solenoids clean using clean cloth moistened with cleaning solvent.

STEP 2

Inspect the springs for cracks, distortion, or evidence of permanent set. Replace a spring if any of these defects are seen.

STEP 3

Inspect the spools for damage to the finish, bent condition, or other damage. Check that spools slide easily in the bore of the valve housing. Replace the complete valve if any defects are observed.

STEP 4

Check plugs, cap screws, and nut for damaged threads and corrosion. Replace the part if threads are damaged or if the part is corroded.

STEP 5

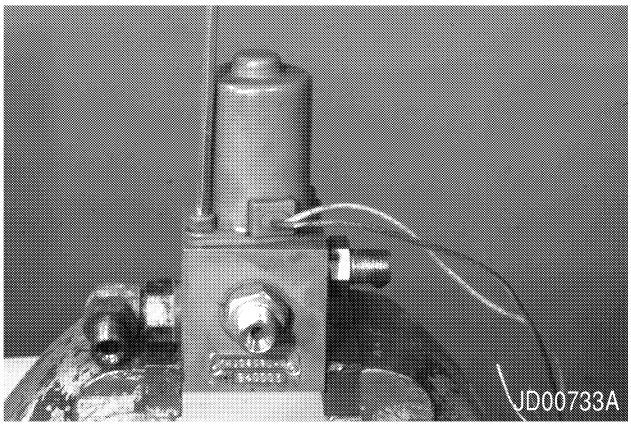
Inspect the solenoid connector for cracks and missing or broken contacts. Replace the complete valve if any of these conditions are seen. Check wires for damaged insulation; if insulation is damaged, repair using electrical tape. Connect an ohmmeter across the contacts of the connector; check that ohmmeter indicates continuity. If ohmmeter does not indicate continuity, replace complete valve.

STEP 6

Check valve housing for damaged bores, internal thread damage, and signs of internal wear. If any defects are seen, replace the valve as a complete assembly.

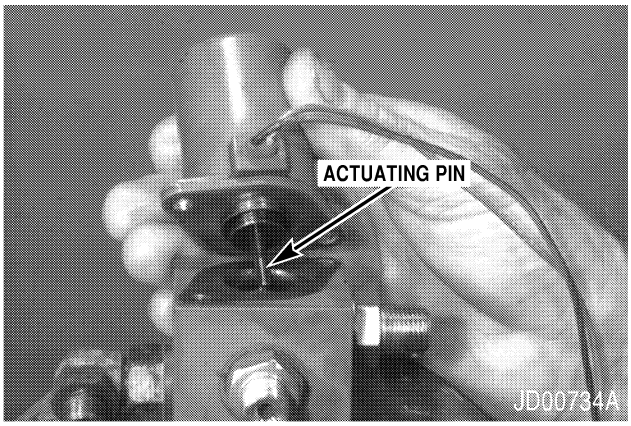
Disassembly

STEP 1



Remove the two socket head cap screws holding the solenoid to the valve body.

STEP 2

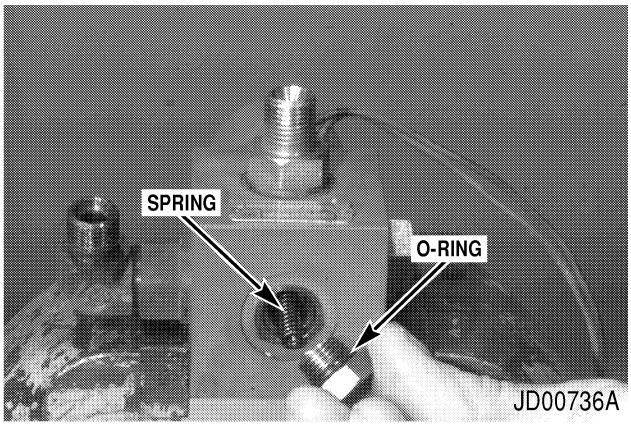


Remove the solenoid. Be careful not to drop or loose the actuating pin.

STEP 3

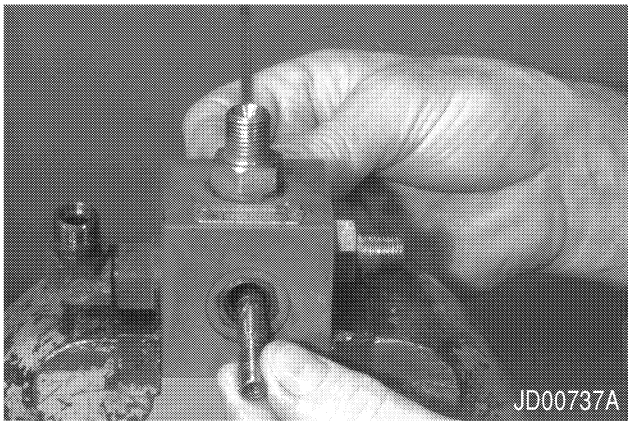
Remove and discard the O-ring.

STEP 4



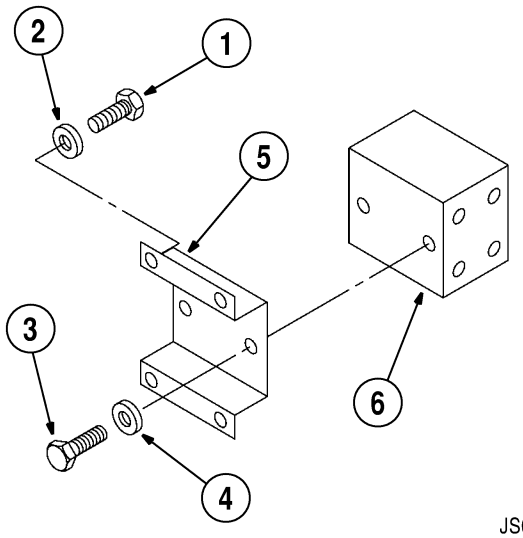
Remove the plug. Remove and discard the O-ring from the plug. Remove the spring from the valve bore.

STEP 5



Using a suitable tool push the spool through the valve body and remove from bore.

STEP 14



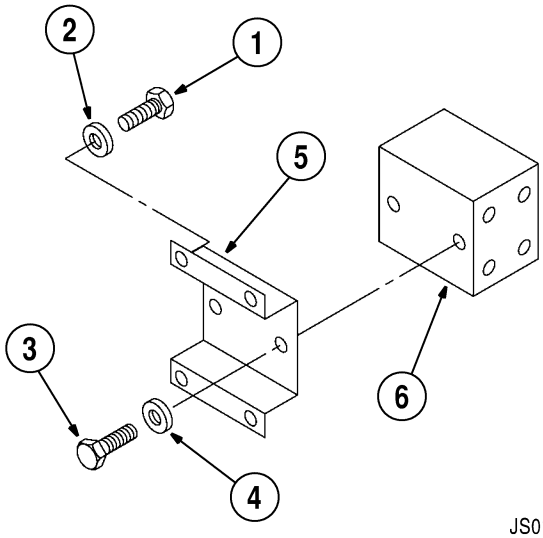
JS01225A

1. Cap Screw
2. Flat Washer
3. Cap Screw
4. Flat Washer
5. Bracket
6. Cushion Valve

Support the cushion valve and remove the four cap screws and flat washers holding the bracket attached to the cushion valve to the machine. Remove the cushion valve and the bracket from the machine. Remove the two cap screws and flat washers holding the bracket to the cushion valve and remove the bracket.

Installation

STEP 1



JS01225A

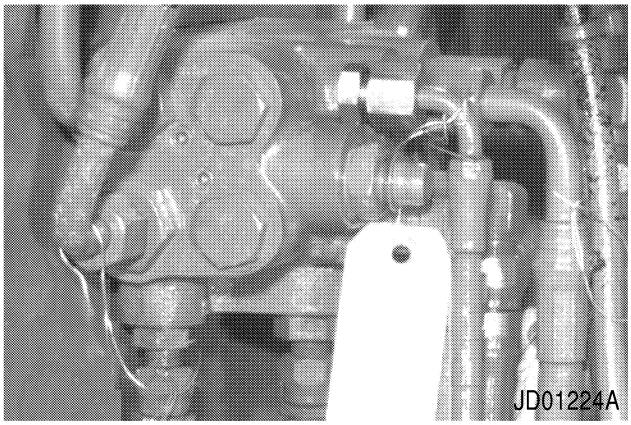
1. Cap Screw
2. Flat Washer
3. Cap Screw
4. Flat Washer
5. Bracket
6. Cushion Valve

Position the bracket on the cushion valve and install the two flat washers and cap screws. Position the cushion valve with the bracket installed on the machine. Secure the bracket with the cushion valve attached to the machine using the four flat washers and cap screws.

STEP 2

Turn on the vacuum pump connected to the hydraulic reservoir.

STEP 3

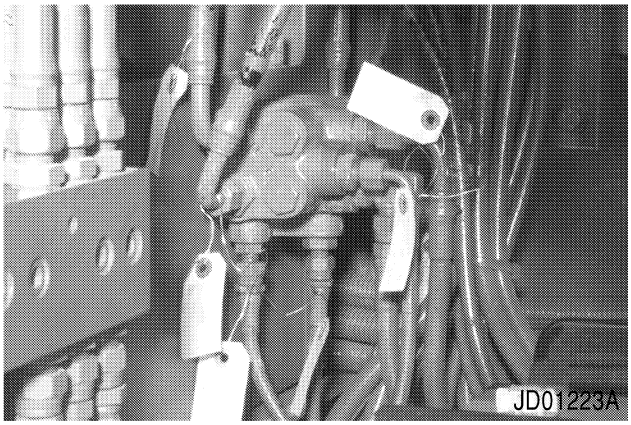


Remove plugs from hydraulic hoses and caps from cushion valve ports. Connect hydraulic hoses to cushion valve following tags applied during removal.

STEP 4

Turn off the vacuum pump connected to the hydraulic reservoir.

STEP 5



Verify correct connection of hoses and remove identification tags.

STEP 6

Disconnect the vacuum pump from the hydraulic reservoir.

STEP 7

Remove DO NOT OPERATE tag from ignition key.

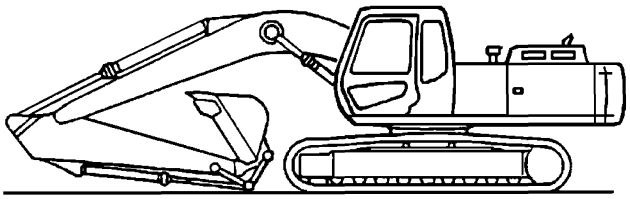
STEP 8

Start engine and operate control levers. Shut down the engine and the check cushion valve for hydraulic oil leakage. Tighten the fittings and plugs if hydraulic oil leakage is observed.

RELIEF VALVE AND SHUTOFF VALVE

Removal

STEP 1



UA-01

Park the machine on a level surface. Lower the attachment to the ground.

STEP 2

Turn the ignition switch to the OFF position to stop the engine.

STEP 3

Turn the ignition switch to the ON position. Check that the CONTROLS LOCK symbol is not displayed on the systems display panel.

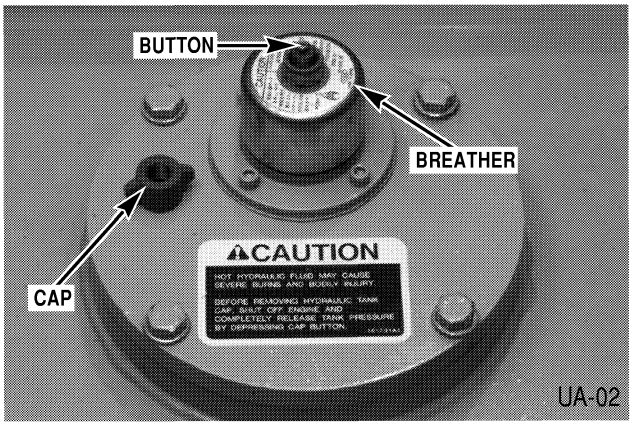
STEP 4

Operate the swing and attachments control levers back and forth, left and right ten times, to release pressure in the hydraulic system.

STEP 5

Turn the ignition switch to the OFF position.

STEP 6



UA-02

At the top of the hydraulic reservoir, remove the cap from the breather. Push down on the button to release the air pressure in the hydraulic reservoir. Install the cap on the breather.

> ⚠ **WARNING:** *Before doing any maintenance on the hydraulic system, make sure that all hydraulic pressure has been released by operating the control levers several times and the hydraulic reservoir air pressure has been released. Failure to do so could cause serious injury.* CSM120

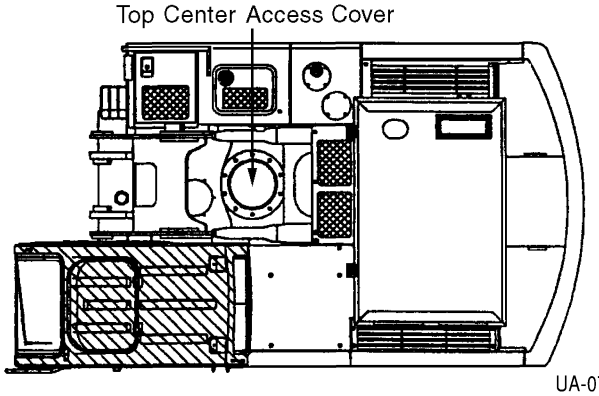
STEP 7

Install a DO NOT OPERATE tag on the ignition key.

STEP 8

To prevent loss of hydraulic oil when disconnecting the hydraulic lines, connect a vacuum pump to the hydraulic reservoir. (See Section 8000.)

STEP 9



UA-07

Remove six cap screws and washers and remove the top center access cover.

Section

8009

HYDRAULIC RESERVOIR PRESSURIZATION SYSTEM

8009

CASE CORPORATION

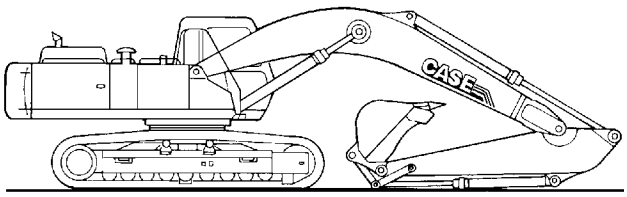
Rac 7-64710

Printed in U.S.A.
September 1995

AIR TANK

Removal

STEP 1



JS01204A

Park the machine on a level surface. Lower the attachment to the ground.

STEP 2

Turn the key switch to the OFF position to stop the engine.

STEP 3

Turn the key switch to the ON position. Make sure the left control console is down in the OPERATING position and the gate lock control lever is pushed down to the OPERATING position. Check that the CONTROLS LOCK symbol is not displayed on the systems display panel. If the CONTROLS LOCK symbol is displayed, push and release the CONTROLS OFF button on the left control panel.

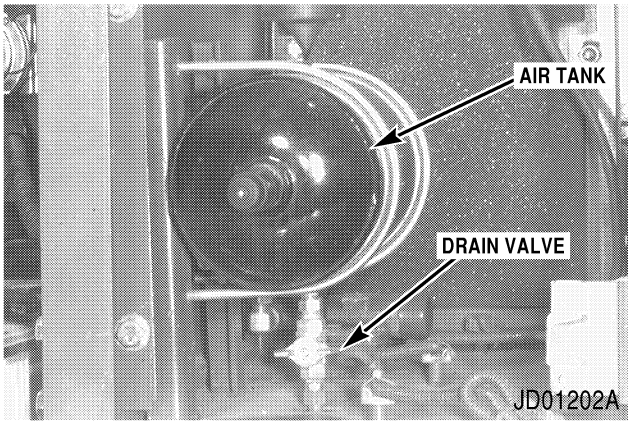
STEP 4

Operate the swing and attachments control levers back and forth, left and right, ten times to release hydraulic system pressure.

STEP 5

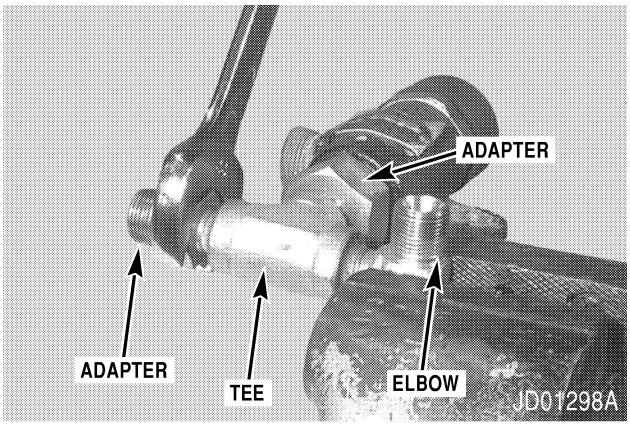
Turn the key switch to the OFF position.

STEP 6



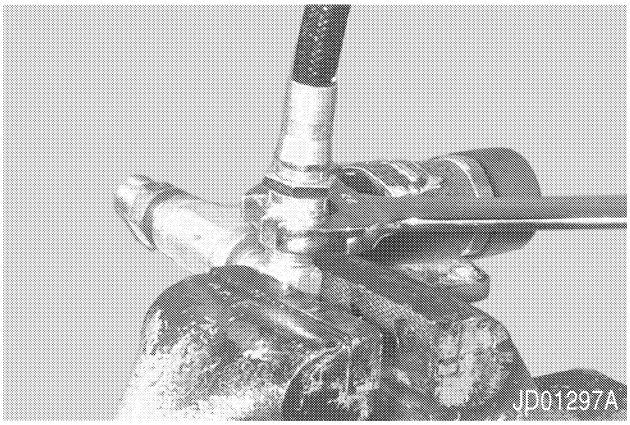
Open the left side access doors. Open the air tank drain valve to release air pressure.

STEP 1



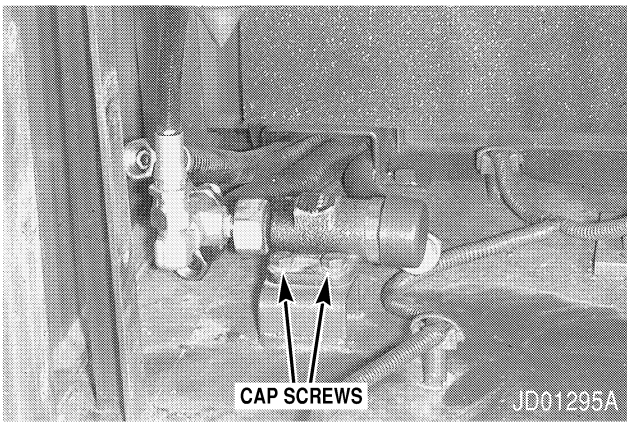
Install the two adapters, tee, and elbow in the governor.

STEP 2



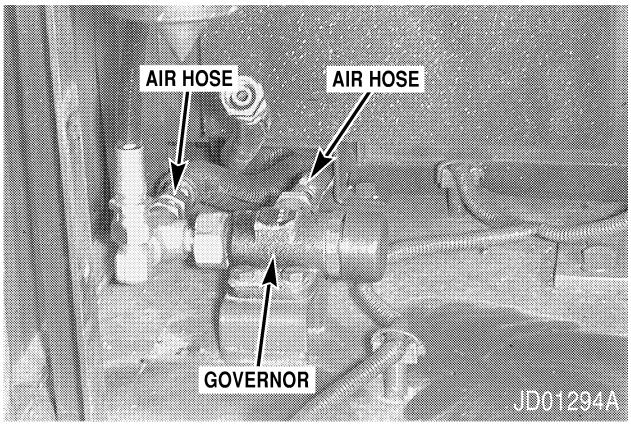
Install the air hose on the elbow.

STEP 3



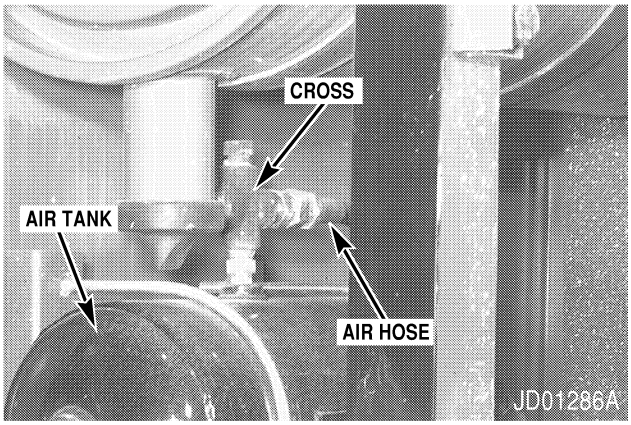
Position the governor in the machine. Install the two lock washers and cap screws to secure the governor.

STEP 4



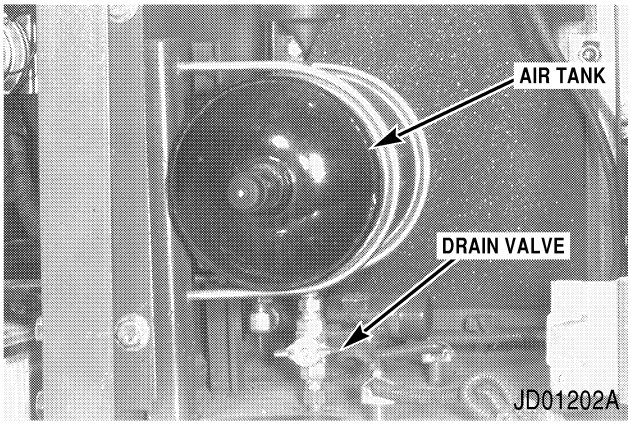
Connect the two air hoses to the governor following the tags installed during removal. Remove and discard the tags from the air hoses.

STEP 5



Connect the air hose from the governor to the cross at the top of the air tank.

STEP 6

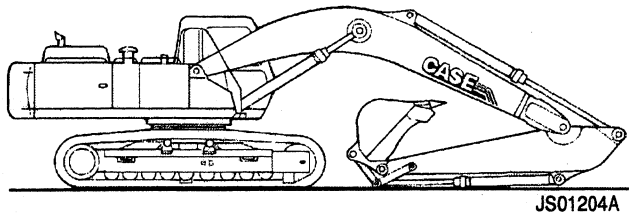


Close the drain valve at the bottom of the air tank.

FAN DRIVE MOTOR HYDRAULIC PUMP

Removal

STEP 1



Park the machine on a level surface. Lower the attachment to the ground.

STEP 2

Turn the key switch to the OFF position to stop the engine.

STEP 3

Turn the key switch to the ON position. Make sure the left control console is down in the OPERATING position and the gate lock control lever is pushed down to the OPERATING position. Check that the CONTROLS LOCK symbol is not displayed on the systems display panel. If the CONTROLS LOCK symbol is displayed, push and release the CONTROLS OFF button on the left control panel.

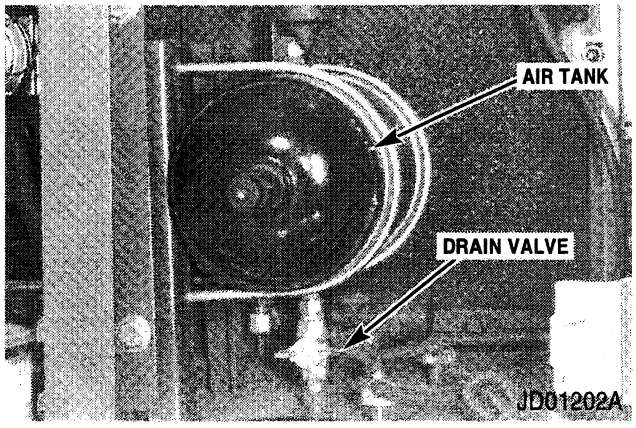
STEP 4

Operate the swing and attachments control levers back and forth, left and right, ten times to release hydraulic system pressure.

STEP 5

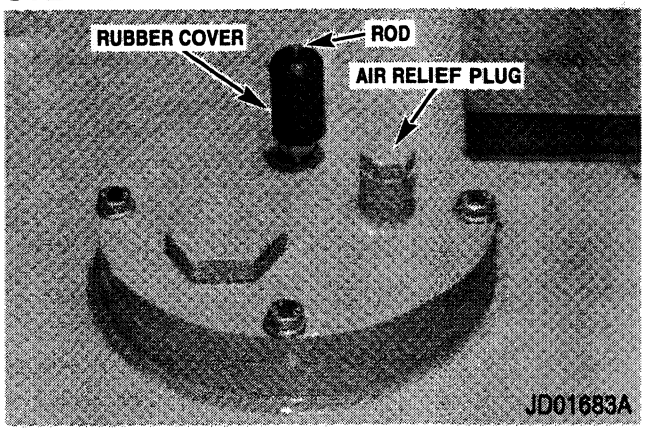
Turn the key switch to the OFF position.

STEP 6



Open the left side access doors. Open the air tank drain valve to release air pressure.

STEP 7



At the top of the hydraulic reservoir, loosen the air relief plug to release air pressure in the hydraulic reservoir. When air pressure release starts, stop loosening the air relief plug. Air pressure can also be released by lifting the rubber cover from the breather, raising the rod in the breather and releasing the air pressure. When all air pressure is released, tighten the air relief plug and close the air tank drain valve.

> **WARNING:** *Before doing any maintenance on the hydraulic system, make sure that all hydraulic pressure has been released by operating the control levers several times and the hydraulic reservoir air pressure has been released. Failure to do so could cause serious injury.* CSM120

> **WARNING:** *Pressurized hydraulic system; before you replace the hydraulic filters or service the hydraulic system, release the hydraulic reservoir air pressure. If you do not follow these instructions, you can be injured.* SA047

STEP 8

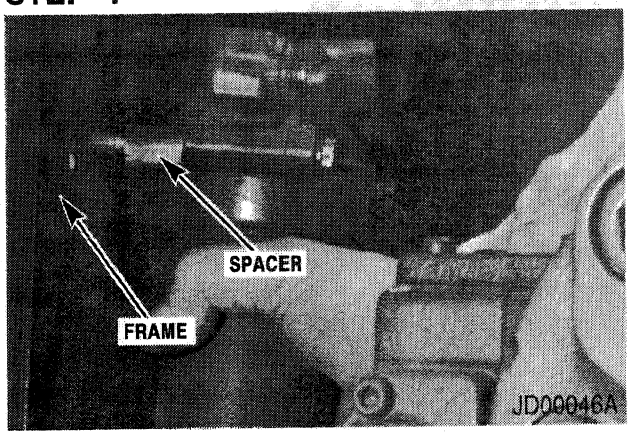
Install a DO NOT OPERATE tag on the ignition key.

STEP 9

To prevent loss of hydraulic oil when disconnecting the hydraulic lines, connect a vacuum pump to the hydraulic reservoir. (See Section 8000.)

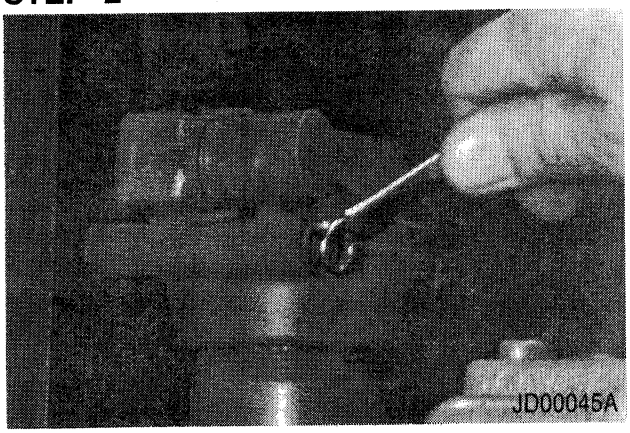
Installation

STEP 1



Install the two cap screws with lock washers into the filter head. Install the spacers on the cap screws.

STEP 2

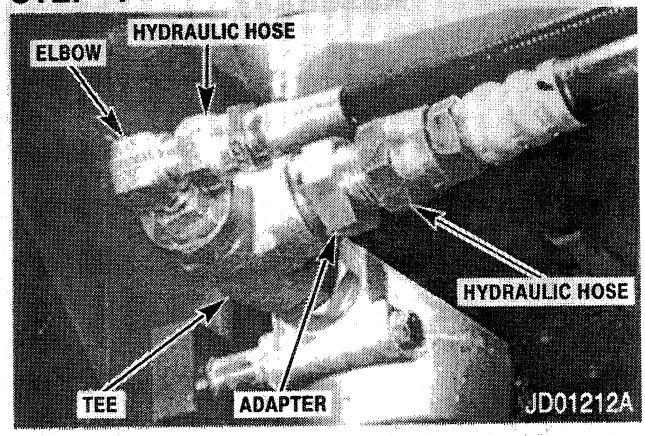


Install the two cap screws and lock washers securing the filter head to the frame.

STEP 3

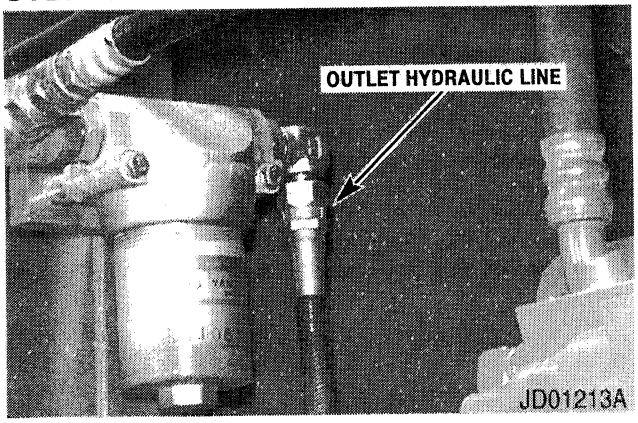
Turn on the vacuum pump.

STEP 4



Remove the plugs from the two hydraulic hoses and the caps from the adapter and elbow installed in the tee. Connect the two hydraulic hoses following the tags installed during removal. Remove and discard the tags.

STEP 5



Remove the cap from the outlet elbow and the plug from the line. Connect the outlet hydraulic line to the outlet elbow.

STEP 6

Turn off the vacuum pump and disconnect it from the hydraulic reservoir. Check for and repair any leaks.

STEP 7

Remove the tags from the hydraulic lines.

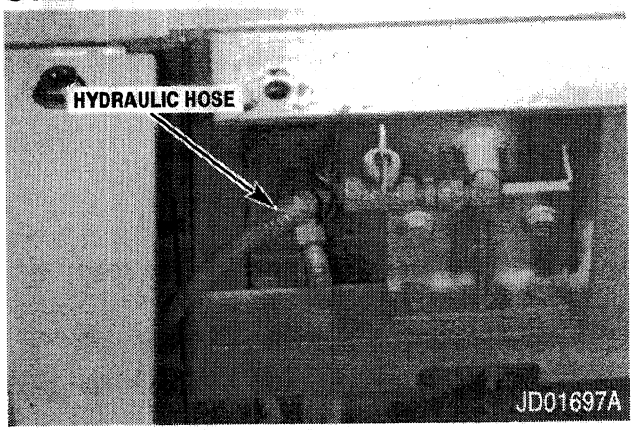
STEP 8

Close the right side access door.

STEP 9

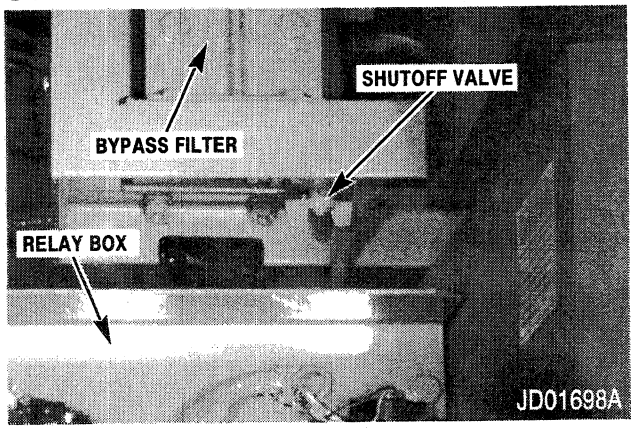
Remove the DO NOT OPERATE tag from the ignition key.

STEP 14



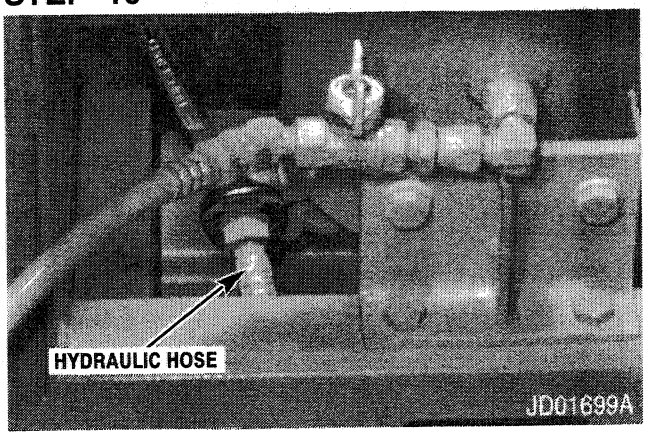
Position a one gallon (3.8 liter) container beneath the shutoff valve to catch any hydraulic oil that may drain from the hydraulic hose when the hose is disconnected. Tag, disconnect, and plug the hose. Remove the container from the machine.

STEP 15



Open the left side access doors. In the battery compartment, reach between the top of the relay box and the bottom of the bypass filter and close the shutoff valve.

STEP 16



Position a two gallon (7.6 liter) container beneath the shutoff valve to catch any hydraulic oil that may drain from the hydraulic hose when the hose is disconnected. Tag, disconnect, and plug the hose.

STEP 17

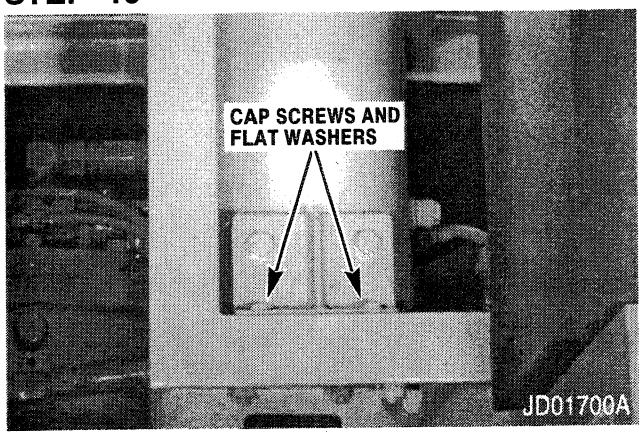
Turn off the vacuum pump connected to the hydraulic reservoir.

STEP 18

Open the shutoff valve at the bottom of the bypass filter and drain the hydraulic oil into the two gallon (7.6 liter) container. When all the oil has drained from the bypass filter housing, close the shutoff valve. Remove the container from the machine.

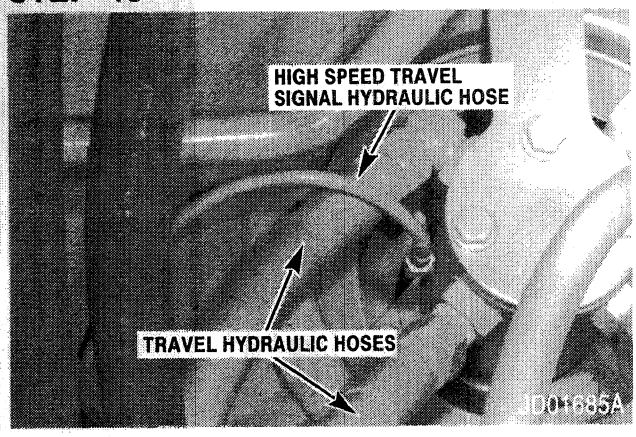
NOTE: *The numbers in parentheses in the following step refer to the numbers shown in the illustration on page 19.*

STEP 19



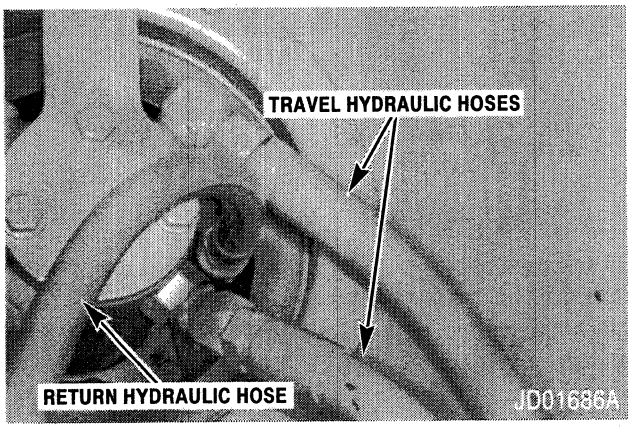
Remove the four cap screws (1), flat washers (2), and nuts (3) securing the bypass filter housing. Remove the bypass filter from the machine.

STEP 13



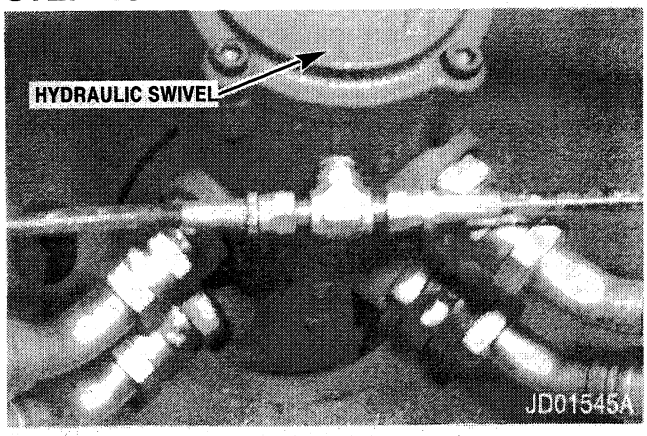
Disconnect the two travel hydraulic hoses and the high speed travel signal hydraulic hose from the hydraulic swivel. Cap or plug the hoses and the hydraulic swivel ports.

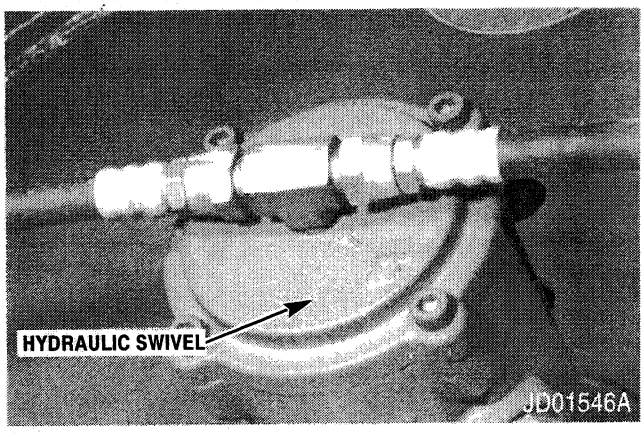
STEP 14



Disconnect the two travel hydraulic hoses and the return hydraulic hose from the hydraulic swivel. Cap or plug the hoses and the hydraulic swivel ports.

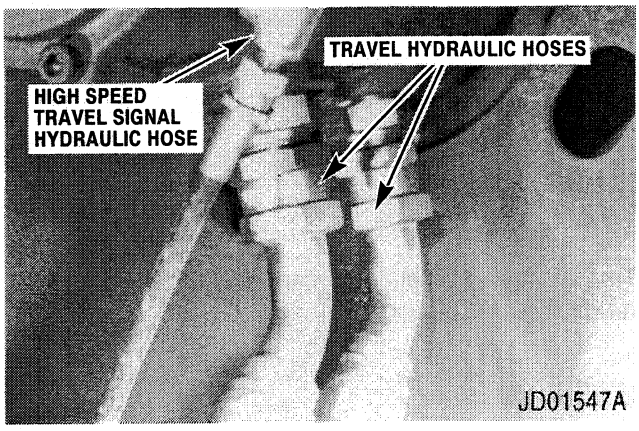
STEP 15





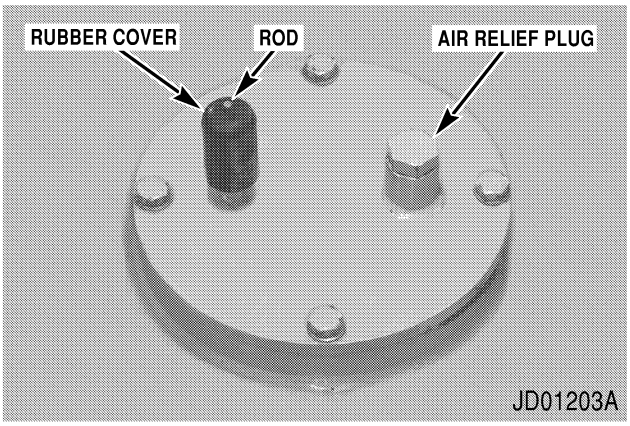
At the bottom of the hydraulic swivel, install identification tags on the hydraulic hoses. Have ready the caps and plugs to cap and plug the ports and hoses.

STEP 16



Disconnect the two travel hydraulic hoses and high speed travel signal hydraulic hose for the right travel motor from the hydraulic swivel. Cap or plug the hoses and the hydraulic swivel ports.

STEP 7

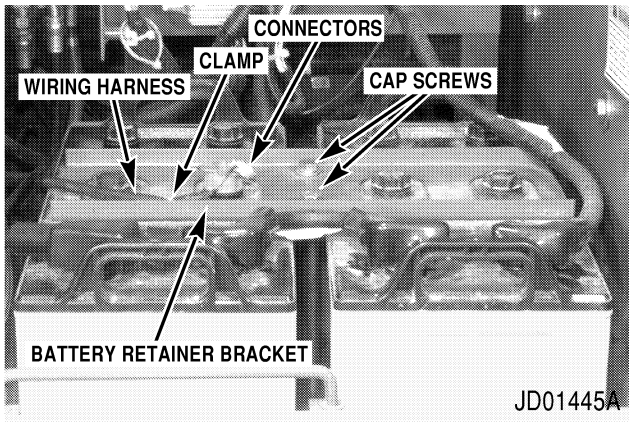


At the top of the hydraulic reservoir, loosen the air relief plug to release air pressure in the hydraulic reservoir. When air pressure release starts, stop loosening the air relief plug. Air pressure can also be released by lifting the rubber cover from the breather, raising the rod in the breather and releasing the air pressure. When all air pressure is released, tighten the air relief plug and close the air tank drain valve.

WARNING: *Before doing any maintenance on the hydraulic system, make sure that all hydraulic pressure has been released by operating the control levers several times and the hydraulic reservoir air pressure has been released. Failure to do so could cause serious injury.* CSM120

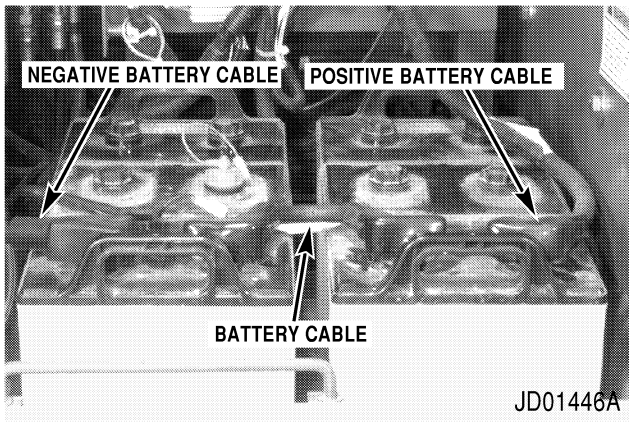
WARNING: *Pressurized hydraulic system; before you replace the hydraulic filters or service the hydraulic system, release the hydraulic reservoir air pressure. If you do not follow these instructions, you can be injured.* SA047

STEP 8



Open the left side access doors. Disconnect the battery sensor connector from the wiring harness connector. Bend the clamp up slightly and pull the wiring harness from under the clamp. Remove the two cap screws, lock washers, and flat washers. Remove the battery retainer bracket.

STEP 9



Disconnect the negative battery cable then the positive battery cable from the batteries. Disconnect and remove the battery cable from the batteries. Remove the batteries from the machine. Close the left side access doors.

NOTE: *The numbers shown in parentheses in the following steps refer to the illustration on page 14.*

STEP 1

Connect suitable lifting equipment of sufficient capacity to the counterweight (6).

NOTE: *The counterweight (6) weighs 13,230 lb (6,048 kg).*

STEP 2

Install the same number of shims (7) at each of the upper structure I-beam counterweight mounting points as removed in step 10 of removal.

STEP 3

Move the counterweight (6) into position on the upper structure rear frame I-beams. Align the holes in the counterweight with the holes of the upper structure rear frame I-beams.

STEP 4

Install the six flat washers (5) and cap screws (4) to secure the counterweight (6). Tighten the cap screws (4) to 985 to 1136 lb-ft (1335 to 1540 Nm).

STEP 5

Install the three flat washers (3), lock washers (2), and cap screws (1) to secure the counterweight (6) to the rear of the upper structure. Tighten the cap screws to 80 to 94 lb-ft (108 to 127 Nm).

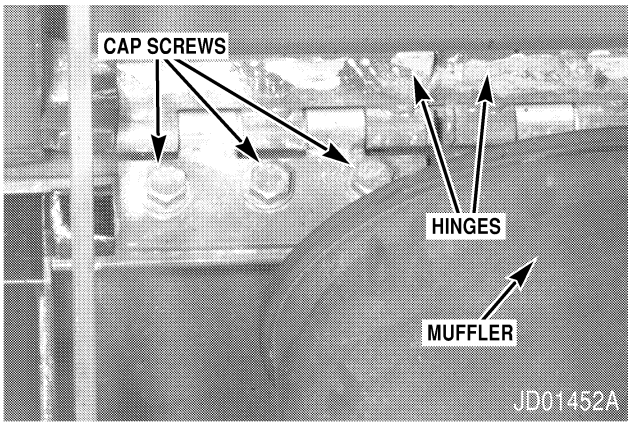
STEP 6

Disconnect the lifting equipment from the counterweight.

STEP 7

Connect suitable lifting equipment to the engine hood. Move the engine hood into position.

STEP 8



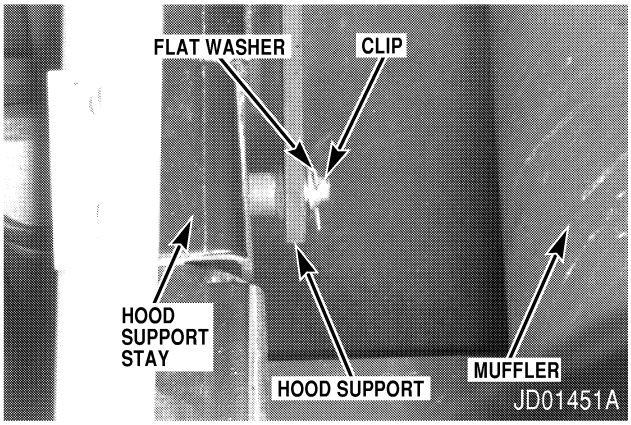
Install the twelve cap screws and flat washers to secure the four hood hinges.

STEP 9

NOTE: *Two people are required for this step.*

With the hood held open, install the hood support on the pin of the hood support stay.

STEP 10

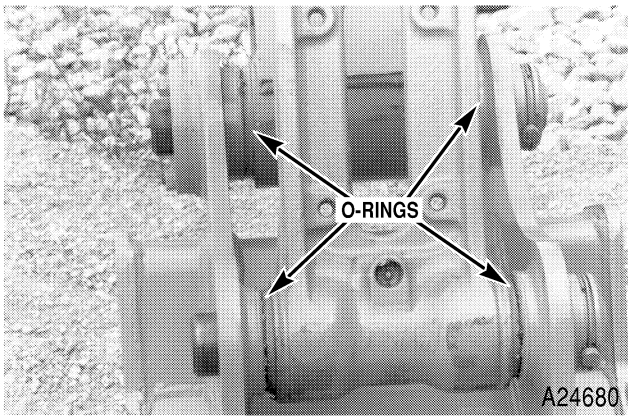


Install the flat washer and clip to secure the hood support.

STEP 11

Disconnect the lifting equipment from the engine hood.

STEP 20



Push the four O-rings (5 and 8) into the gap between the bucket (3) and the arm and the bucket and the link (4).

STEP 21

Remove the DO NOT OPERATE tag from the ignition key.

Section

9004

OPERATOR'S SEAT, OPERATOR'S SEAT BRACKET, AND SEAT BELTS

CASE CORPORATION

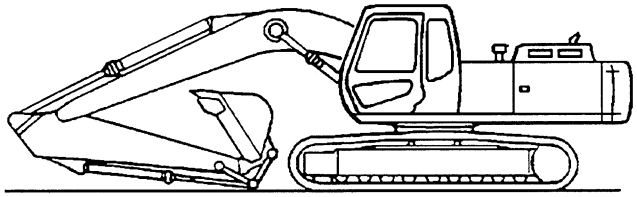
Rac 7-62260

Printed in U.S.A.
December 1994

CAB

Removal

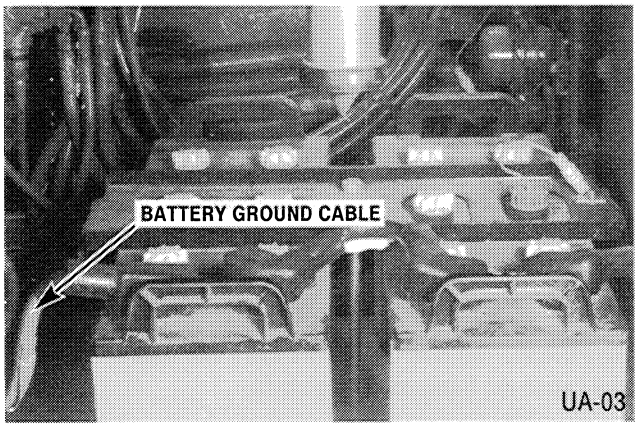
STEP 1



UA-01

Park the machine on a level surface. Lower the attachment to the ground.

STEP 2

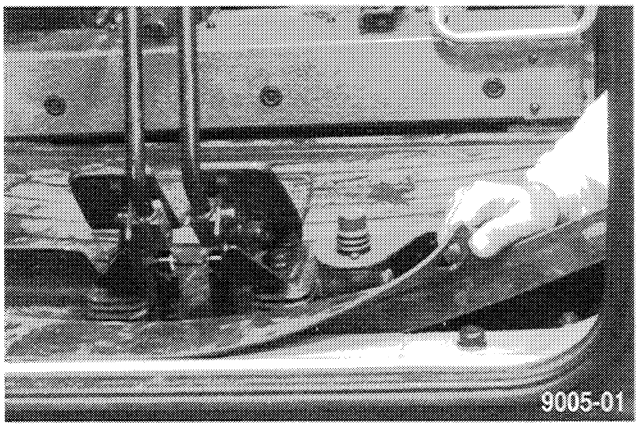


Open the left side access doors. Disconnect battery ground (-) cable. Close the access doors.

STEP 3

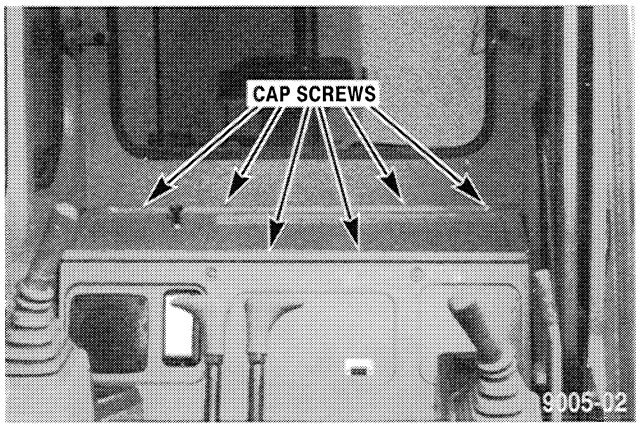
Remove the operator's seat. (See Section 9003.)

STEP 4



Remove the rubber floor mat from the cab.

STEP 5



Remove the six socket head cap screws, the two washers and the two conical washers that secure the top rear panel and cover. Remove the top rear panel, with the cigarette lighter, and the cover.

STEP 6

Disconnect the electrical lead to the cigarette lighter at the underside of the top rear panel.

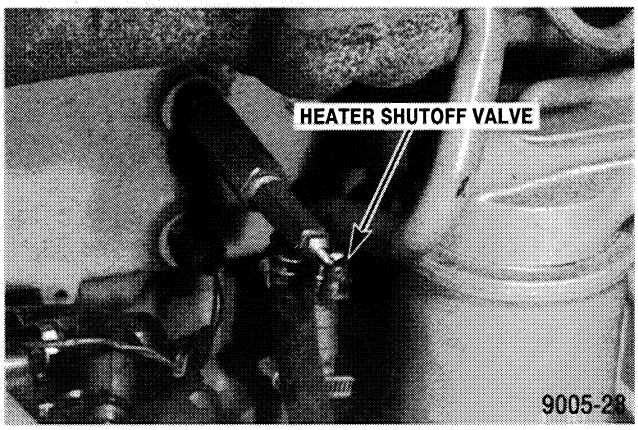
STEP 7

Fill the radiator with a solution of 55 percent ethylene glycol and 45 percent water. Completely fill the radiator and the coolant reservoir slowly to the neck with coolant.

STEP 8

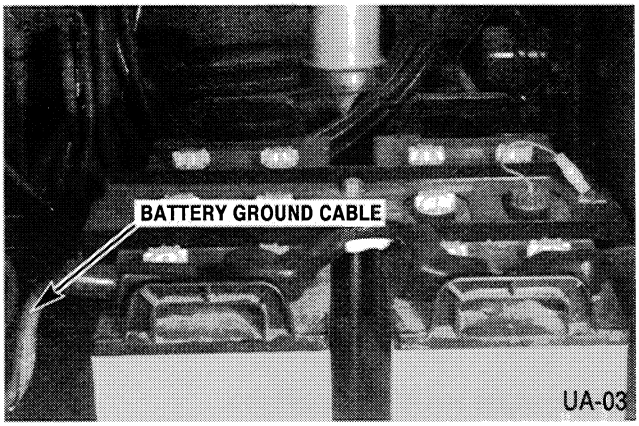
Install the radiator cap and the coolant reservoir cap. Make sure both caps are tight.

STEP 9



Close the heater shutoff valve.

STEP 10



Open the left side access doors. Connect the battery ground (-) cable. Close the access doors.

STEP 11

Start the engine and run at idle speed for one minute. Stop the engine.

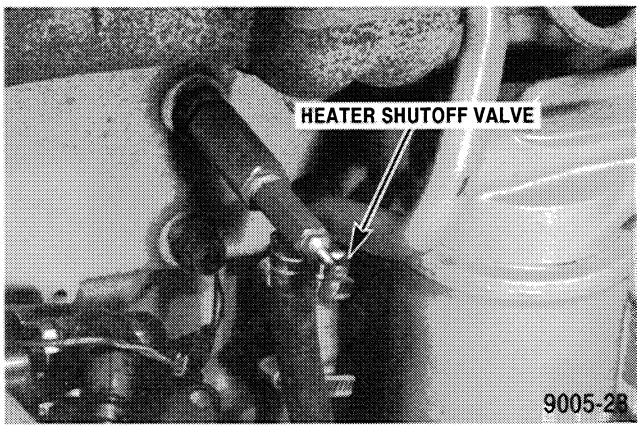
STEP 12

Add coolant to the radiator and coolant reservoir. Make sure both are full. Install both caps.

STEP 13

Start the engine and run at full throttle.

STEP 14



When the coolant temperature gauge shows normal operating temperature (gauge in the green zone) open the heater shutoff valve.

Section

9006

AIR CONDITIONER TROUBLESHOOTING AND SYSTEM CHECKS

9006

CASE CORPORATION

Rac 7-62280

Printed in U.S.A.
September 1995

Cab Temperature Check

Air Louvers

1. Make sure the louvers and recirculation vents are fully open for most efficient air conditioner operation.
2. Check blower; blower must be running.

Air Conditioner

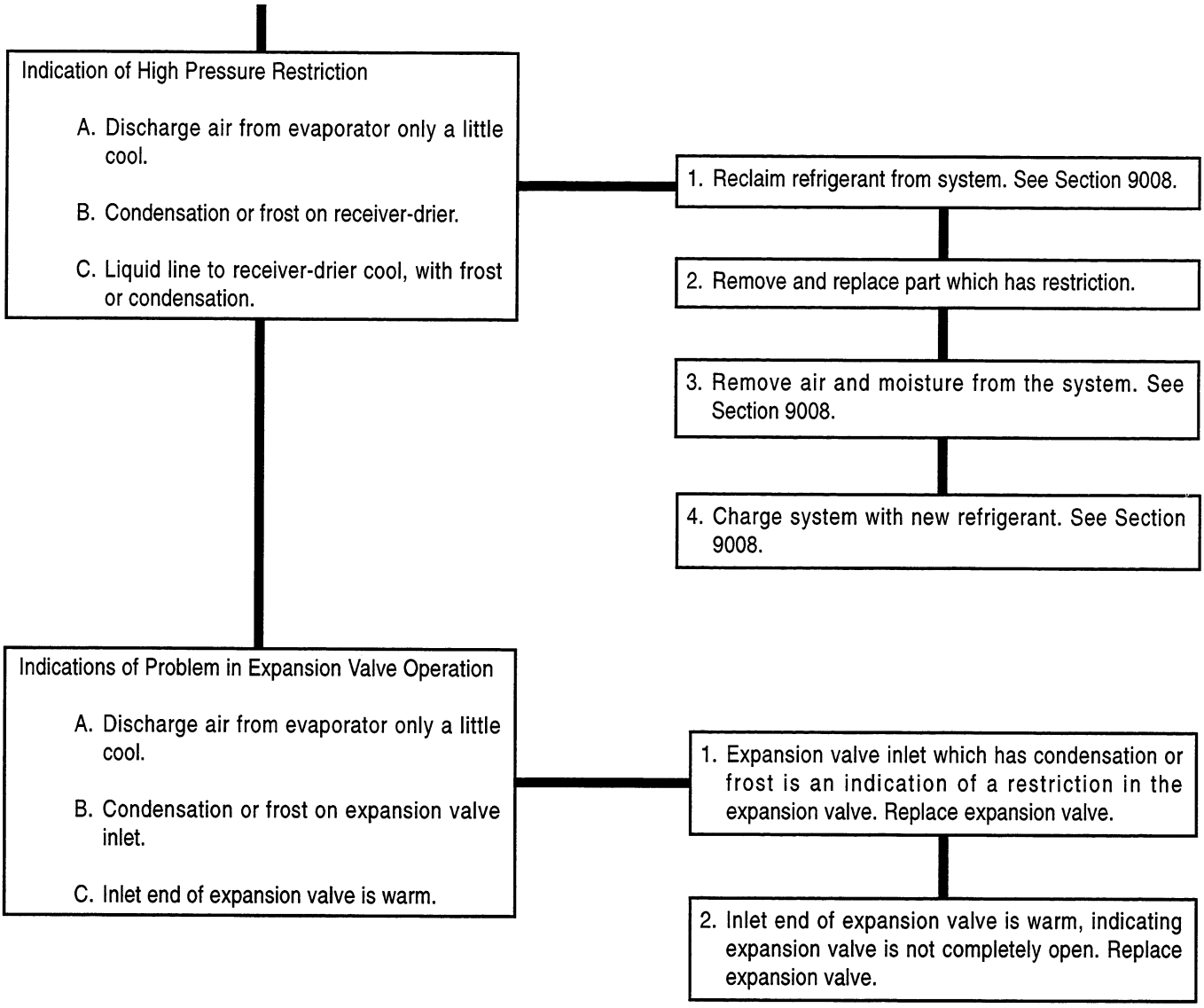
1. Feel the air conditioner hoses. The high pressure hoses (small line) must be warmer than the low pressure hose (large line).
2. If no temperature difference, the system is low on refrigerant, there is a restriction in the system, or compressor is not working correctly.

Duct Temperature

1. Put a thermometer in the air duct and run the compressor for five minutes to make temperature stable.
2. Duct temperature must be below 50°F (10°C) if the system is operating at maximum efficiency.

   NOTE: *Ambient temperature must be 70° to 90°F (21° to 32°C).*
3. If temperature is above 50°F (10°C), system is low on refrigerant, there is a restriction in the system, or compressor is not working correctly.

(Continued from previous page)



SAFETY PROCEDURES

THIS SAFETY ALERT SYMBOL INDICATES IMPORTANT SAFETY MESSAGES IN THIS MANUAL. WHEN YOU SEE THIS SYMBOL, CAREFULLY READ THE MESSAGE THAT FOLLOWS AND BE ALERT TO THE POSSIBILITY OF PERSONAL INJURY OR DEATH. M171B

Refrigerant R-134a is the most stable and easiest to work with of the refrigerants now used in air conditioner systems. Refrigerant R-134a does not contain chlorofluorocarbons (CFC's) which are harmful to the earth's ozone layer.

Safety procedures must be followed when working with refrigerant R-134a to prevent possible personal injury.

1. Always wear safety goggles when doing any service work near an air conditioner system. Liquid refrigerant getting into the eyes can cause serious injury. Do the following if you get refrigerant near or in your eyes:

   A. Flush your eyes with water for 15 minutes.

   B. See a physician immediately.

2. A drop of liquid refrigerant on your skin may cause frostbite. Open the fittings carefully and slowly when it is necessary to service the air conditioner system. Your skin must be treated for frostbite or a physician must be seen if you get refrigerant on your skin.

3. Keep refrigerant containers in the correct upright position. Always keep refrigerant containers away from heat and sunlight. The pressure in a container will increase with heat.

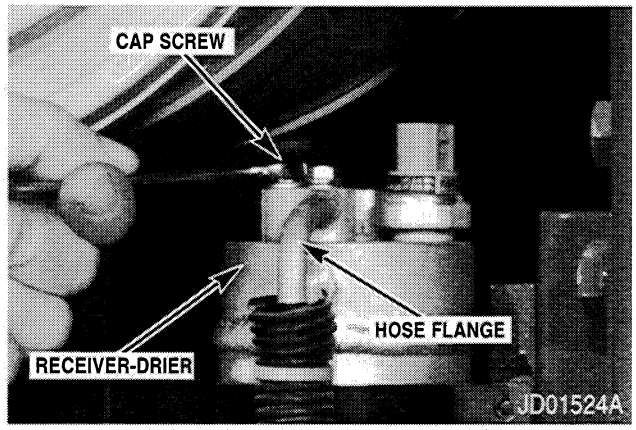
4. Always reclaim refrigerant from the system, if you are going to weld or steam clean near the air conditioner system.

5. Always check the temperature and pressure of the air conditioner system before reclaiming refrigerant and when you test the system.

6. Dangerous gas can form when refrigerant comes in contact with an open flame. Never permit fumes to be inhaled.

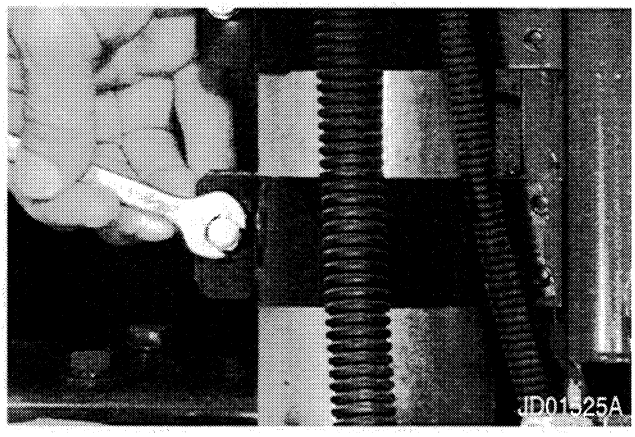
7. Never leak test with compressed air or flame tester. Tests have indicated that at pressures above atmospheric, and with air concentrations greater than 60% by volume, R-134a can form a combustible gas.

STEP 7



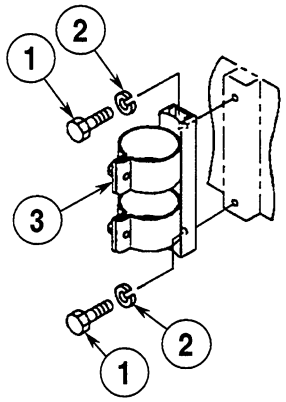
Remove the cap screw, lock washer, and flat washer securing the hose flange to the receiver-drier. Disconnect the hose flange from the receiver-drier. Plug and cap the hose flange and port to prevent entry of foreign material. Repeat this step to disconnect the other hose flange from the receiver-drier.

STEP 8



Remove the two cap screws and lock washers. Pull the receiver-drier from the bracket and remove it from the machine.

STEP 9

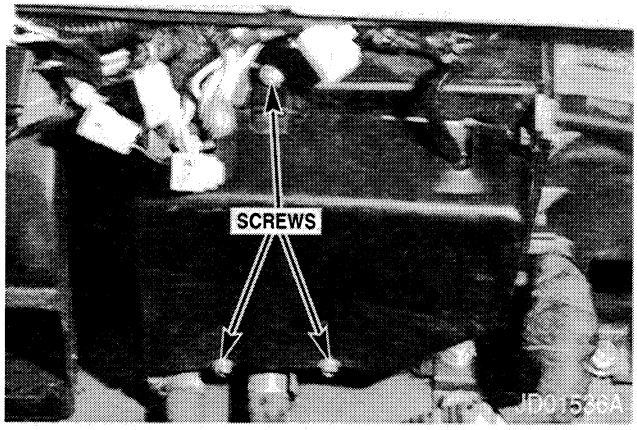


JS01526A

1. Cap Screw
2. Lock Washer
3. Bracket

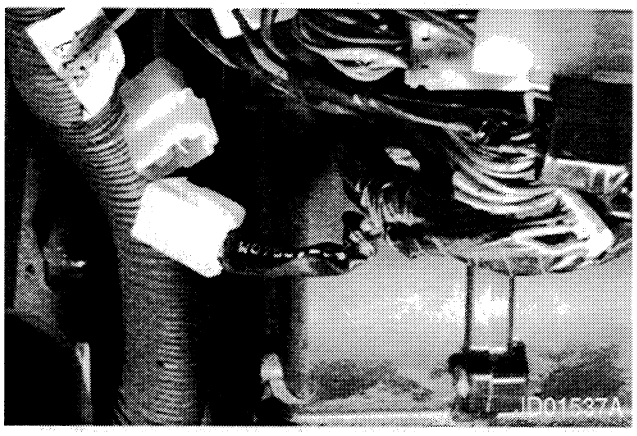
Remove the two cap screws (1) and lock washers (2) securing the bracket (3) to the machine. Remove the bracket from the machine.

STEP 8



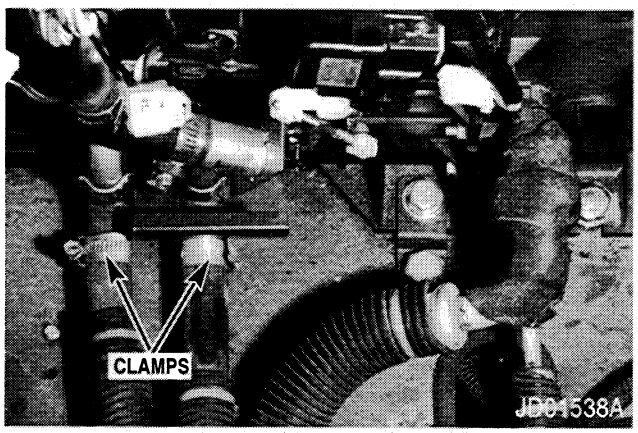
Remove the three screws securing the cover to the air conditioner unit. Remove the cover.

STEP 9



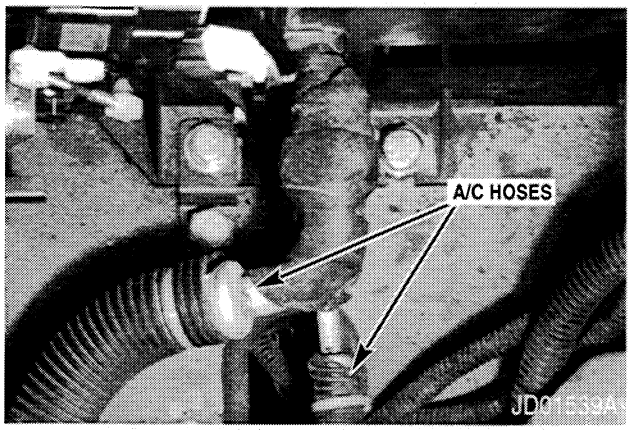
Disconnect the wiring harness connector from the air conditioner unit connector.

STEP 10



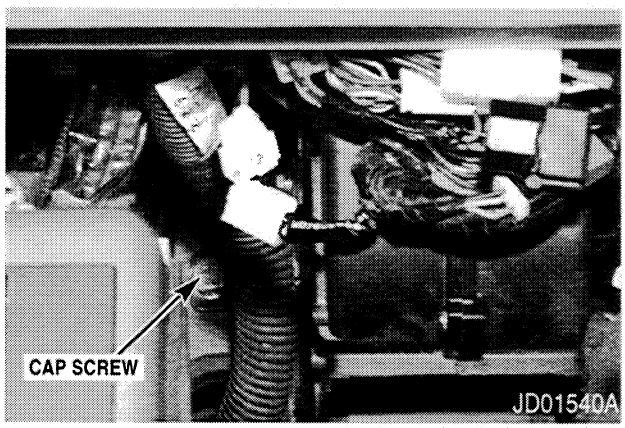
Loosen the two clamps securing the water hoses. Disconnect the water hoses. Plug hose ends and cap ports to prevent loss of coolant.

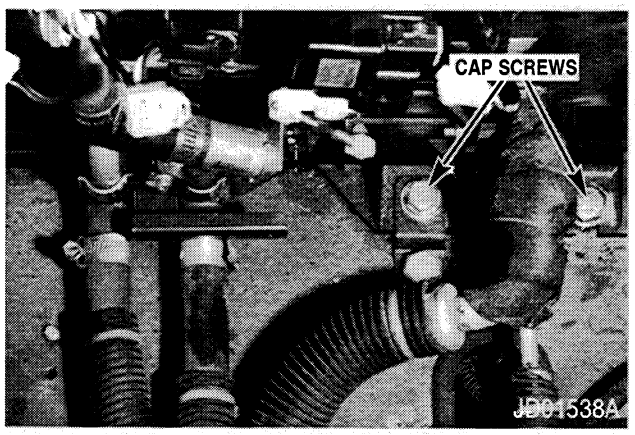
STEP 11



Disconnect the two air conditioner hoses. Plug hose ends and cap ports to prevent entry of foreign material.

STEP 12





Remove the cap screws, lock washers, and flat washers securing the air conditioner unit to the machine. Remove the unit from the machine.

SAFETY PROCEDURES

THIS SAFETY ALERT SYMBOL INDICATES IMPORTANT SAFETY MESSAGES IN THIS MANUAL. WHEN YOU SEE THIS SYMBOL, CAREFULLY READ THE MESSAGE THAT FOLLOWS AND BE ALERT TO THE POSSIBILITY OF PERSONAL INJURY OR DEATH. M171B

Refrigerant R-134a is the most stable and easiest to work with of the refrigerants now used in air conditioner systems. Refrigerant R-134a does not contain any chlorofluorocarbons (CFC's), which are harmful to the earth's ozone layer.

Safety procedures must be followed when working with Refrigerant R-134a to prevent possible personal injury.

1. Always wear safety goggles when doing any service work near an air conditioner system. Liquid refrigerant getting into the eyes can cause serious injury. Do the following if you get refrigerant near or in your eyes:

   A. Flush your eyes with water for 15 minutes.

   B. See a physician immediately.

2. A drop of liquid refrigerant on your skin may cause frostbite. Open the fittings carefully and slowly when it is necessary to release pressure from the air conditioner system. Your skin must be treated for frostbite or a physician must be seen if you get refrigerant on your skin.

3. Keep refrigerant containers in the correct upright position. Always keep refrigerant containers away from heat and sunlight. The pressure in a container will increase with heat.

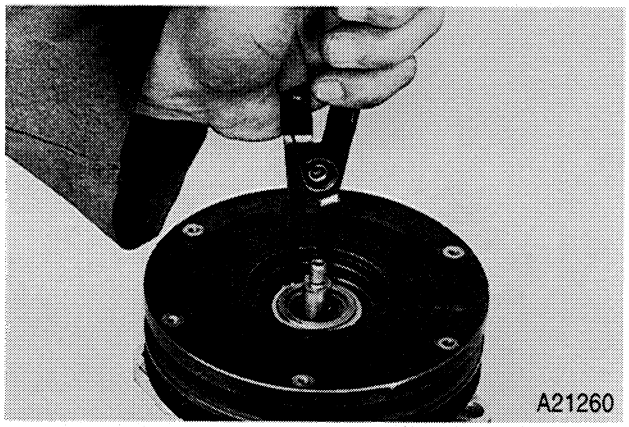
4. Always reclaim refrigerant from the system, if you are going to weld or steam clean near the air conditioner system.

5. Always check the temperature and pressure of the air conditioner system before reclaiming refrigerant and when you test the system.

6. Dangerous gas can form when refrigerant comes in contact with an open flame. Never permit fumes to be inhaled.

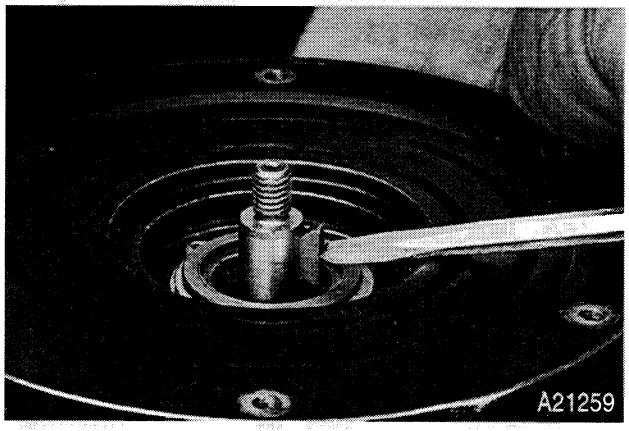
7. Never leak test with compressed air or flame tester. Tests have indicated that at pressures above atmospheric, and with air concentrations greater than 60% by volume, R-134a can form a combustible gas.

STEP 8



Install the external snap ring on the front housing hub.

STEP 9

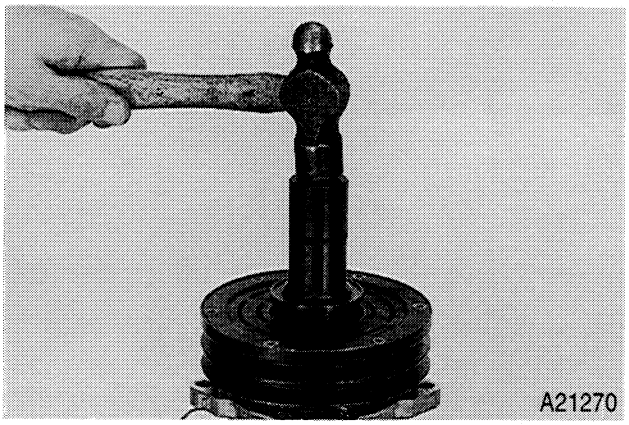


Install the key in the rotor shaft.

STEP 10

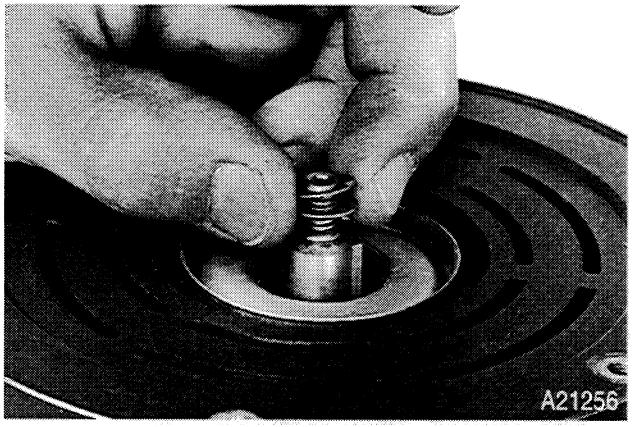
Place the bearing dust cover in the bore. Place the driver from the special tool kit over the dust cover.

STEP 11



Gently tap the dust cover until it is seated.

STEP 12

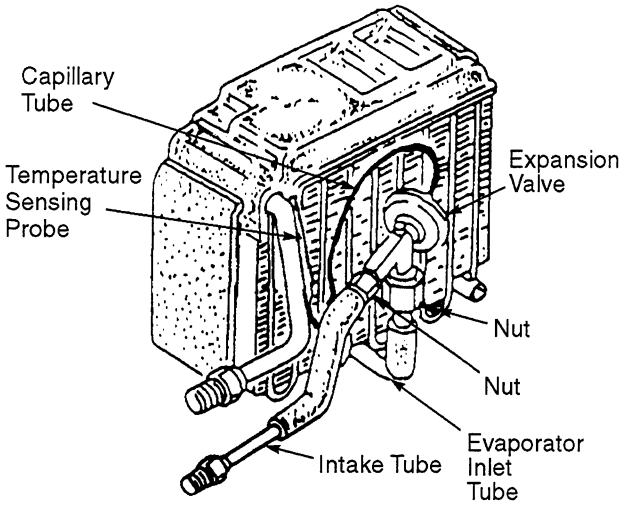


Install the shim(s) on the rotor shaft.

STEP 13

Install the front plate on the rotor shaft. Make sure the keyway in the plate is aligned with the key in the shaft. Install the driver over the shaft.

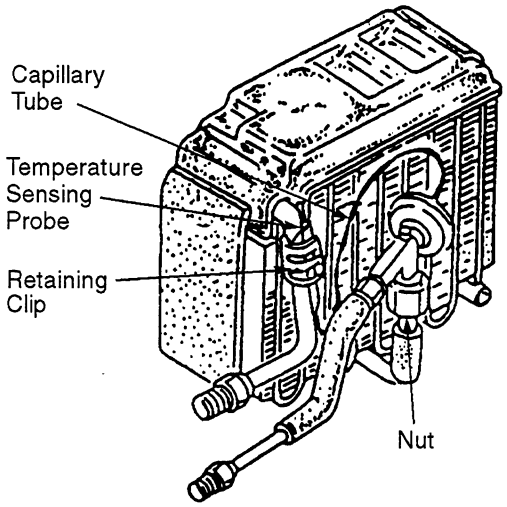
STEP 3



JS01485A

Install the expansion valve on the evaporator. Hand tighten the evaporator inlet tube nut to allow some movement.

STEP 4

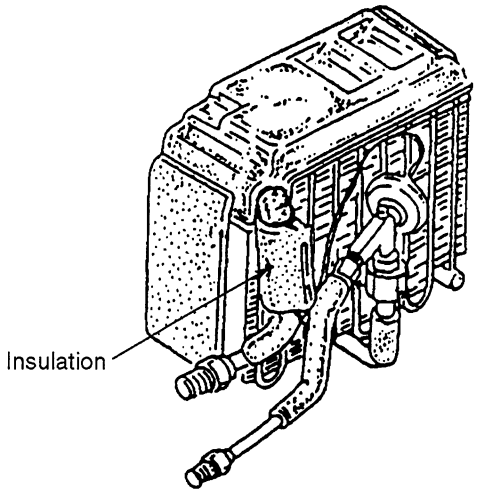


JS01484A

Install the retaining clip. Ensure that the temperature sensing probe is installed upwards. Tighten the nut to secure the expansion valve.

NOTE: *Use care when installing the temperature sensing probe not to kink or twist the capillary tube.*

STEP 5



JS01483A

Install the insulation around the tubing and temperature sensing probe. Apply Loctite 406 Adhesive to each end of the insulation. Press the ends of the insulation together for several seconds until the adhesive dries.

NOTE: *Ensure that the temperature sensing probe is completely covered with insulation to keep it free from outside air.*

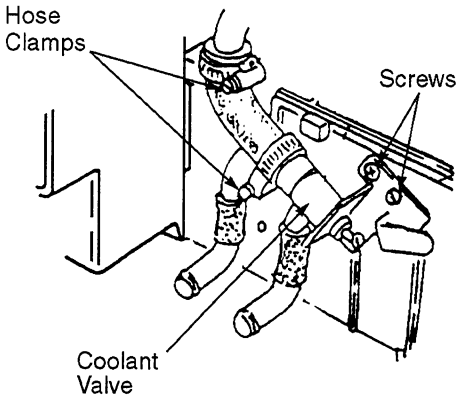
STEP 6

Install the thermistor on the evaporator and install the evaporator on the cab air conditioner unit. Refer to Thermistor Installation in this section.

Installation

NOTE: *Prior to installation remove the caps from the lines and the plugs from the ports. Inspect the interior of both ports and lines for signs of contamination (dirt, debris or other foreign matter).*

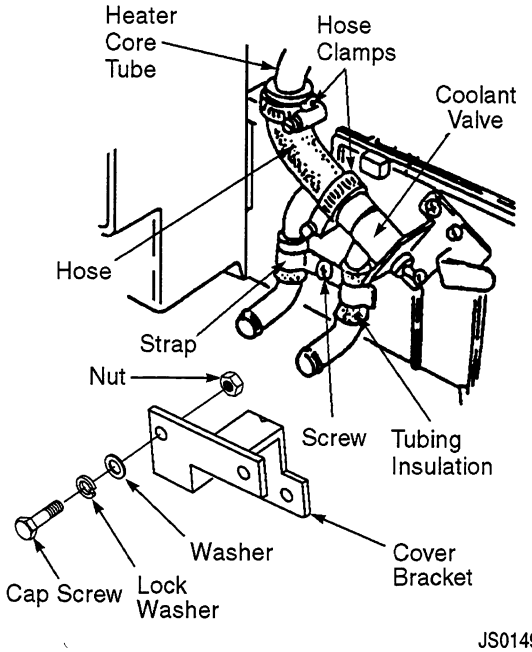
STEP 1



JS01501A

Position the coolant valve on the evaporator lower housing and secure with the three screws. Install the heater hose and secure with the two hose clamps. Inspect the tubing insulation and replace if needed.

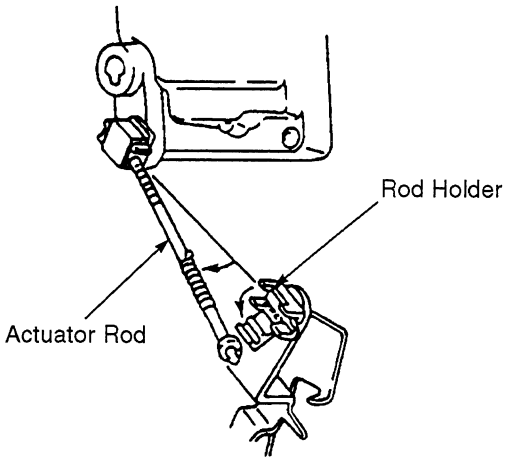
STEP 2



JS01490A

Install the strap and secure with the screw. Install the cover bracket and secure using two lock washers, washers, cap screws, and nuts.

STEP 3



JS01497A

Install the coolant valve actuator rod in the rod holder and close the rod holder cover.

STEP 4

Install the cover. Refer to Cab Air Conditioner Housing Covers Installation in this section.